Massachusetts Agriculture 1987

Massachusetts Department of Food and Agriculture

Michael S. Dukakis, *Governor*
Hoyte, *Secretary of Environmental Affairs*
Schumacher, Jr., *Commissioner of Food and Agriculture*

A message from the Secretary of Environmental Affairs

Dear Friends:

As we face the challenge of protecting the Commonwealth's environmental quality of life from the side-effects of growth and progress, we are very fortunate to have a community of farmers who truly understand the importance of conservation.

Farmers, as the stewards of the soil, have a close bond with the land which goes far beyond the experience of most other people. The men and women who devote their lives to agriculture deeply respect the power and beauty of the environment. They know how crucial it is that we take every possible measure to keep that environment intact.

I am proud to report that those measures are being taken, thanks to a series of state initiatives aimed at preserving farmland, reducing the use of pesticides and making better use of animal wastes and other byproducts of agriculture.

Bolstered by a new infusion of funds from the $500 million Open Space bill signed into law by Governor Dukakis in December, the Agricultural Preservation Restriction (APR) program is adding more farms to the list of more than 220 farms on over 20,000 acres which have been spared from development under the program.

The state's efforts in on-farm composting also are moving ahead. I'm pleased that the Department of Food and Agriculture received several million dollars from the $260 million Solid Waste bill enacted last year to help set up farm composting operations statewide.

And we continue to make progress toward the goal of reducing the use of the more toxic pesticides in Massachusetts. More and more farmers are turning instead to Integrated Pest Management and other effective approaches to controlling pests.

Again, it is the Massachusetts farming community - the men and women out there in the fields and pastures and orchards - who deserve most of the credit for these accomplishments. I join Governor Dukakis and Commissioner Gus Schumacher in expressing our appreciation - and our own commitment to keeping the momentum rolling.

Sincerely,

James S. Hoyte
Secretary

A message from the Commissioner

Dear friends of Massachusetts agriculture,

For the agricultural community in our state, 1987 was marked by meeting challenges, but always finding new ones waiting to be addressed. We are buoyed by the Massachusetts farmer's record of adaptive ingenuity - finding a way to succeed in a difficult climate of intense development pressure.

Massachusetts agriculture has a proud history. Our state is home to the oldest continuously operating cattle farm in America - Appleton Farms in Ipswich - which marks its 350th year in 1988. We have 38 other farms that have operated 200 or more years.

In an effort to preserve this heritage, we remain firmly committed to the Agricultural Preservation Restriction program. We plan to use judiciously the $35 million allocated under the 1987 Open Space bill to add to the 20,000 acres on 225 farms already under APR. As farmers fight the lure of developers' offers, this program becomes ever more critical.

Despite the odds, some segments of our agribusiness sector are thriving. The so-called "green industry" is doing well as scores of families discover the pleasures of home gardening. Farmers across the state have enjoyed great gains through direct marketing at their own retail outlets. The Massachusetts food-processing industry is enjoying robust health, with $3 billion in goods produced in 1987, doubling the output of 10 years ago.

1987 also saw the expansion of the Farmers Market Coupon program, under which low-income mothers and the elderly receive coupons redeemable for fresh produce at farmers markets. About $90,000 in coupons was redeemed. We plan to expand the program in 1988.

While many segments of our farm-and-food industry are at least holding their own, the situation is quite different for dairy farmers. Unrelenting attrition has dropped our dairies below the 500 mark. We plan to do all we can to keep the dairy farmers we still have. Price continues to be the biggest problem for them and we continue to seek more equitable national price structures. In addition, we have several programs already in place designed to help the dairy industry, including a new $3 million grant program for agri-composting.

We look forward to meeting this challenge and others as we build upon past successes in our common quest to see that the business of growing in Massachusetts keeps growing.

Sincerely,

August Schumacher Jr.
Commissioner

Massachusetts Department of Food and Agriculture

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These board and committee members generously volunteer their time to these important groups that work to insure the integrity and success of Massachusetts agriculture. Their hard work is deeply appreciated by the Commissioner and staff of the Massachusetts Department of Food and Agriculture.

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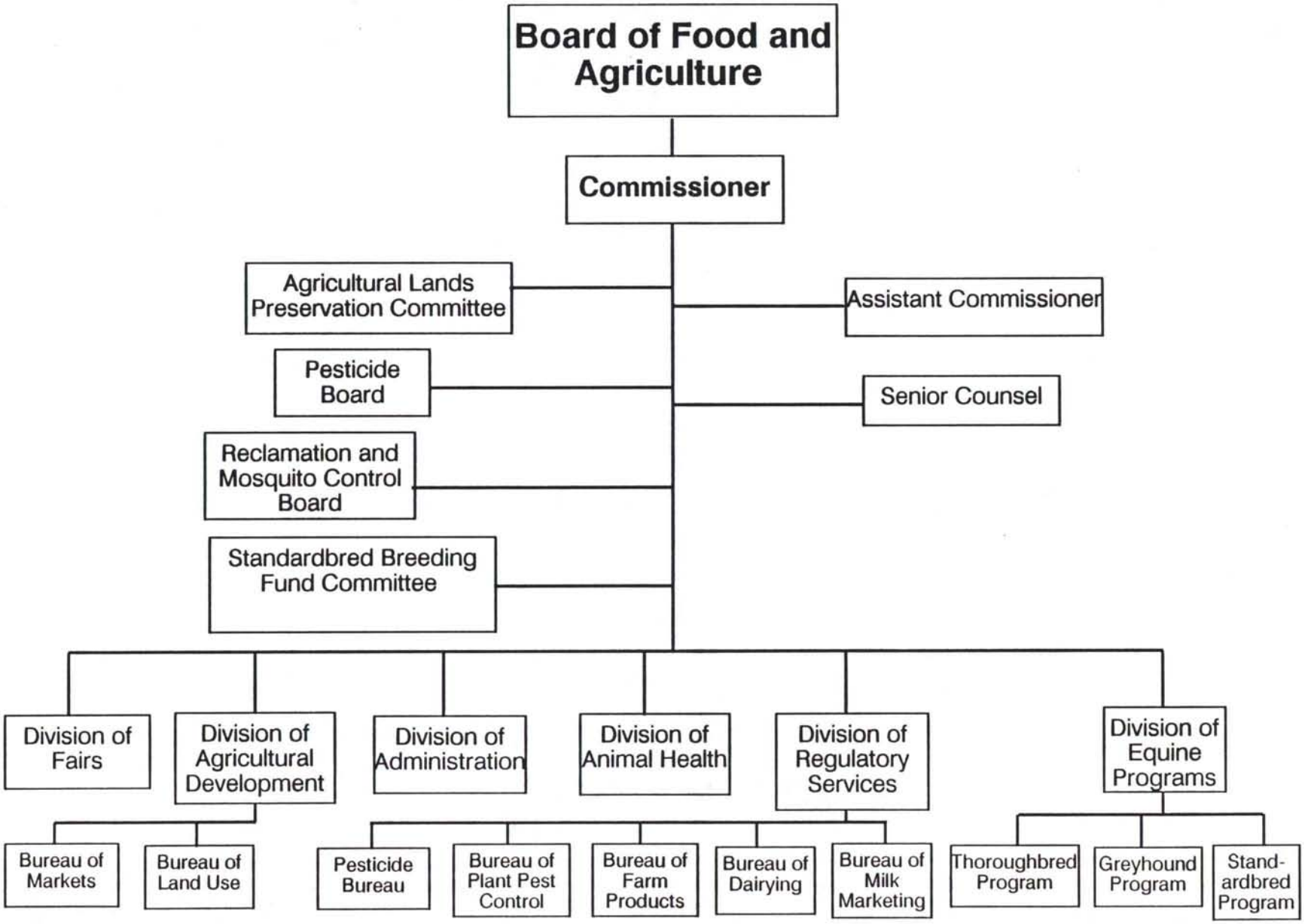
Massachusetts Agriculture 1987

Massachusetts Agriculture 1987 was produced by the Public Information staff: Chris Phillips - writing and editing and Diane Baedeker - design, production and photography.

Special thanks are extended to all Department staff who gave their aid and cooperation in this project.

ORGANIZATIONAL CHART
Massachusetts Department of Food and Agriculture



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Division of Agricultural Development

Walter Larmie, Director

The future of agriculture in Massachusetts hinges largely on the state's ability to demonstrate the economic viability of the industry. The Department of Food and Agriculture, through its Division of Agricultural Development, continued to take steps in 1987 to ensure that viability. We addressed many areas of importance, focusing our attention particularly closely on food processing, the agricultural labor shortage and on-farm composting..

Food Processing: Realizing that value-added food processing is a valuable outlet for farmers seeking dependable markets for their products, the Department in 1987 worked on the development of agricultural enterprise zones or "parks" in various parts of the state. More specifically, the Department is working closely with the newly formed Western Massachusetts Food Industry Association, Massachusetts Land Bank, and several other concerns and non-profit agencies to create an agricultural "park" which will bring together local farmers and food processors. A feasibility study is being done to determine the best locations and types of businesses to include. The park will also include a food processing incubator facility which will be linked to technical experts at the University of Massachusetts.

Labor Shortage: The shortage of labor that affects virtually every aspect of the Massachusetts business community has taken its toll on agriculture. Because farmers cannot control the maturation process of their produce, sufficient labor for planting, cultivating and harvesting is essential. The Division of Agricultural Development is working with independent farmers, food processors and corporations to explore labor alternatives. One option being considered is a job training program within the urban areas of Massachusetts. The program would utilize the expertise of Youth Development staff of the Cooperative Extension service, local colleges, and the region's nurseries.

On-Farm Composting: The Department of Food and Agriculture is pleased that the Legislature in 1987 approved a $260 million solid waste bill which provides $3 million for agricultural composting. The agricultural composting program is expected to provide seed money for 60 or more individuals and companies to begin or expand on-farm composting operations. It is anticipated that on-farm composting will boost the farm economy while providing an environmentally sound, efficient way to handle farm waste and organic materials currently being landfilled.

The Division of Agricultural Development expects to continue such innovative programs in 1988 to fulfill the needs of the agricultural community and provide consumers with quality "Massachusetts Grown . . . and Fresher!" products.

Western Mass. Office

The Western Mass. office in West Springfield has expanded and and now includes: Joan Hobart, Fair Supervisor; Tom Gallagher, Statistician; Charlie Touchette, Market Investigator; Al Carl, Jr., Chief Apiary Inspector; Alexandrine Porter Martin, Agricultural Development/Fairs Assistant; Paul Ricco, Stanley Burton, and Richard Thompson, Pesticide Inspectors. The staff is working very hard to meet the needs of the agricultural community as well as the general public. Special emphasis has been put on inter-office and inter-agency cooperation to make the limited funds and staff go further in providing a well-rounded agricultural support system to farmers and communities. We expect more programming and participation by farmers as awareness of the office spreads within the agricultural community of Western Massachusetts.

Federal-StateMarketing Improvement Program:

The Department of Food and Agriculture in 1987 again made use of grants from the USDA under Federal-State Marketing Improvement Program to help finance some innovative agri-marketing enterprises. Massachusetts was awarded $40,000 in FSMIP funds for the 1987 fiscal year. The money was distributed to nine different projects. The USDA provides the FSMIP grants to state departments of agriculture for conducting cooperative marketing service projects which improve the marketing, handling, storage, processing, transportation and distribution of agricultural products. In Massachusetts, FSMIP funds have been used on a number of key projects, including the expansion of the state's network of farmers' markets statewide (the Massachusetts Federation of Farmers' Markets was established with a FSMIP grant) FSMIP funds also have been used to support such cooperative ventures as the Pioneer Valley Growers' Association.

Bureau of Markets

Janet Christensen, Acting Chief

Expanding the market for Massachusetts agricultural products is the major objective of the Bureau of Markets, and a strong promotional program is the key to our accomplishments in 1987.

A major component of our marketing strategy is the "Massachusetts grown...and fresher!" slogan. Over the past fifteen years this has paid off through expanded markets for many farmers in the Commonwealth and a greater awareness by Massachusetts consumers of the quality and freshness of local food products.

What our staff lacks in size, it makes up for in enthusiasm, and the many events and activities of the past year have helped us reach out in new ways for new markets for Massachusetts growers.

Supermarkets and Roadside Markets

To help promote the sale of our excellent local farm and food products, the Bureau develops "point-of-purchase" materials for use by supermarkets and roadside farmstands. This year's king-size posters picturing fruits and vegetables, generated by Guy Paris and Norfolk Partners, were colorful reminders the "The Time is Ripe for Massachusetts."

With the assistance of the Department's promotional advisory committee, the Department hosted the third annual "Fine Foods Dinner" to thank supermarket buyers for their interest in purchasing local products. We also arranged the proclamation ceremonies for "Massachusetts Supermarket Week" during August.

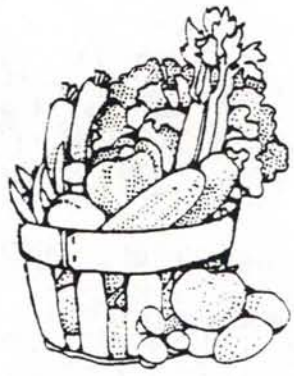
The Bureau also offers roadside farmstands "Massachusetts grown and fresher" signage and crop brochures and cooperates with the Massachusetts Roadside Farmstand and Pick-Your-Own Association on their promotional projects.

Foreign Trade

The Foreign Trade Office assists Massachusetts agribusiness firms in launching international marketing programs geared to their products for their current regions of export and/or new global areas..

In May of 1987, the Department exhibited at the National Association of State Departments of Agriculture (NASDA) Food and Agriculture Exposition in Seattle, displaying many of the fine fresh and value-added products of our state. The Department also arranged for exhibits by several Massachusetts food firms at the NASDA Food Show.

The Department also exhibited for the first time at the ANUGA World Food Market in Cologne, West Germany in October of 1987. This exhibit at the largest food show in the world was arranged in cooperation with Massport. The Department enlisted several agribusiness firms to join in a cooperative exhibit, including Colombo Yogurt, the New York and New England Apple Institute, Nasoya, Welch Foods, Inc., Bea's Cape Cod Cranberry Cake, and New Morning Cereals. There were hundreds of visitors to our booth, and the business interest generated seemed to please the cooperating exhibitors, most of whom were represented by a Department staff member and a Massport trade officer.



The Fresh Connection

The "Fresh Connection" project, aimed at facilitating relations between growers, food processors and those in the restaurant and food service industry featured a luncheon, farm tours and participation in Trade Shows during 1987. The newsletter was also published and sent to some 600 restaurateurs, growers, food processors and members of the media. The program is designed to help local growers find direct markets, and to improve the communication between local producers and restaurant chefs.

The Bureau of Markets coordinated participation in several trade shows throughout the year. To foster direct marketing, commodity group representatives participated in the March 1987 Northeast Food Service and Lodging Exposition, which some 10,000 industry buyers attended. Several Massachusetts farmers were present at July's annual International Fancy Food and Confectionary Show in New York City, as well as the November New York Gourmet Shows. These producers gained increased exposure for their products and generated business.

The late July "Peak of the Season" luncheon at the Colony restaurant in Boston highlighted local produce. The event was planned for members of the media,

presenting an opportunity for them to the meet producers who provided the foods.

Fall "Chef and Food Writer farm tours," in October in Worcester County and in November in Essex County allowed area chefs and restaurateurs as well as members of the press to meet a variety of farmers and producers.

The staff member working on this program is Bonita Oehlke.

Food Buyers Guide and Markets Information

The *Food Buyers Guide* is published weekly by the Bureau of Markets. The state has been divided into three areas: Boston and vicinity, central, and western Massachusetts for the purpose of compiling accurate prices. At the beginning of each week, a market investigator records prices of produce, meat, dairy, and fish from retail stores in their respective areas.

Prices collected for each product are tabulated by range: highest to lowest as well as the most prevalent price for each product.

The *Food Buyers Guide* is mailed to Food Editors, County Extension Services, Growers and consumers as well as members of the agricultural industry in other states.

We have received a tremendous amount of positive feedback from readers. The guide is an excellent source for information on the best buys of the week, future price expectations based on availability of product, and a source for comparison of prices in different areas of the state.

The cover page of *The Food Buyers Guide* features a specific food product with consumer information and recipes on that product. Also a market report is given by a market investigator regarding specials in the retail market. We also work in cooperation with the USDA Fruit and Vegetable Market News office, providing wholesale price information to growers during the local growing season.

Mary Moffitt is the staff member in this Markets program.

Farmers' Markets

The first comprehensive Massachusetts Farmers' Market Directory was compiled this year, containing a profile of each farmers' market. The directory was mailed to growers to assist them in planning their market season and to market masters whose markets are short on farmers to assist them in recruiting more.

The Department hosted the third annual Taste of Massachusetts Tomato Festival at Faneuil Hall Marketplace in cooperation with Massachusetts tomato growers, the University of Massachusetts Suburban experiment station in Waltham, and the marketplace management. Entries from across the state fell into several categories including commercial, back yard grown and hydroponic. All were judged on taste, color, firmness, cutting quality, and shape.

Six new markets for the summer of 1987 were established with city and town Chambers of Commerce and Mayors' Offices cooperating.

Produce was delivered once a week to the Quincy Housing Authority from MCI Shirley.

Anneli Johnson is in charge of the farmers' markets programs; Charlie Touchette covered western Massachusetts in this area for the major part of the growing season.

Farmers' Market Coupon Project

In the summer of 1986, the Massachusetts Federation of Farmers' Markets, a tax-exempt (501 c 3 organization), and the Department of Food and Agriculture began an innovative program to provide access to fresh fruits and vegetables to low income families. Its goal is to help alleviate the problems of hunger and malnutrition while providing assistance to small farms and to the farmers' markets in which they participate.

The project was tested at Holyoke, Quincy, Roslindale, and Worcester in cooperation with Massachusetts Department of Public Health and the Cooperative Extension Service - University of Massachusetts. The Federation of Farmers' Markets served as the financial administrator.

Coupons, along with educational materials on fresh fruits and vegetables, were distributed to the needy families by personnel of the Expanded Food and Nutrition Education Program (EFNEP) through an existing distribution system. Recipients redeemed coupons at Farmers' Markets in their respective cities.

Farmers were reimbursed weekly by the Federation of Farmers' Markets for the amount of coupons they had traded for produce.

In the summer of 1987:

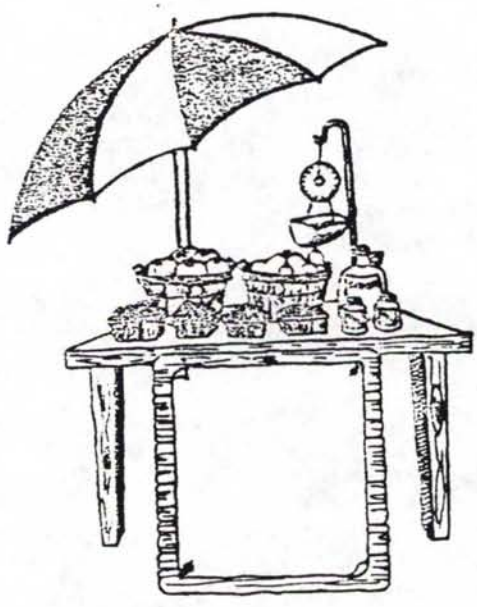
- A total of 11,850 families in 12 local WIC (Women, Infants, and Children Supplemental Feeding Program/Department of Public Health) sites received $10 worth of coupons.
- The number of participating farmers' market sites increased to 14.
- A total of $70,500 worth of coupons were redeemed by young mothers - a redemption rate of 65 percent.
- A total of $23,750 worth of coupons were redeemed by 4,750 elderly households in Brighton, Lawrence, Lowell, Cambridge, and Northampton.

- Over 250,000 pounds of fresh produce were received by inner city and rural families and at the same time it raised the net farm income of smaller family farmers by 30 percent.

The Farmers' Market Coupon Project is projected to expand to a minimum of 28 farmers' markets in 1988. The markets selected for 1988 serve areas where a high degree of hunger and malnutrition exists according to the statistics of the Department of Public Health.

The project will be administered as it was in 1987, except for the addition of the Boston Urban Gardeners Suffolk County Farmers' Market Program. The anticipated client count will be 32,500 families. As a result, we will be increasing the awareness of Massachusetts-grown fresh produce, helping the nutritionally-at-risk families, and increasing the net farm income of the farm families who participate in farmers' market vending.

Anneli Johnson is in charge of the farmers' markets programs; Charlie Touchette covered Western Massachusetts in this area for the major part of the growing season.



Bureau of Land Use

James P. Alicata, Chief

To maintain a sound agricultural economy, it is essential that a sufficient amount of land suitable to agricultural production be made available to the farming community. It is the role of the Bureau of Land Use to achieve this objective. This can be accomplished through the coordination of both the public and private sector in developing plans for land use that are compatible to both the needs of development and agriculture.

1987 was a challenging and productive year for the Bureau, highlighted by the passage and signing of an Open Space Bill which included $35 million for the continuation of the Agricultural Preservation Restriction (APR) program. Due to the previous allocation of APR funds, the Bureau was able to direct attention to alternative preservation techniques which maximize the effect of tax dollars when they become available.

Professional planning services, for example, have been employed to explore ways that values can be shifted from productive farmland to non-agricultural land that would be more suited to housing or other development purposes. By working cooperatively as a Bureau and with other agencies, an awareness and appreciation of the available farmland in every community can be developed and managed. By offering communities a total package of opportunities that include the identification of active farmland through the mapping program, the purchasing of development rights through the APR program, or the proven management experience of the Massachusetts Farmland Stewardship Program and the Community Garden and Fruition programs, the objectives of effective land use management will be acheived.

Municipal Farmland Identification Program:

MFI is a three-year project which inventories and maps parcels of active agricultural land on a town by town basis. This information is valuable to the Agricultural Preservation Restriction (APR) staff in their efforts to create economically viable blocks of protected farmland. In addition, these maps serve as a useful planning tool for town boards and agencies involved in land use issues such as zoning, preservation of open space and resource protection.

1987 has been a very successful year for the MFI Program. Nearly all of the towns in Hampshire, Hampden, Franklin, and southern Worcester counties have been mapped. Martha's Vineyard has been finished and several towns in Berkshire County are presently in various stages of completion. Mapping has also been completed in a number of communities in Plymouth, Bristol, and Barnstable counties.

There has been excellent cooperation from the USDA Soil Conservation Service, which performs the final cartographic work and the Agricultural Stabilization and Conservation Service who have assisted in identifying active agricultural land through the use of aerial photographs.

A very successful pilot project between DFA and the Hazardous Waste Facility Site Safety Council (HWFSSC) during the summer produced a computer generated map of APR distribution throughout the state. This map is the first attempt at digitizing information from the Bureau of Land Use using the computer capabilities of another agency. The Bureau is currently in the process of assessing the feasibility of digitizing all of the Municipal Farmland Identification maps which would help immensely in keeping the maps up to date as well as accurate.

APR Program: The Agricultural Preservation Restriction (APR) Program was established by the Legislature in December, 1977 to protect the Commonwealth's rapidly diminishing farmland resources through the purchase of Agricultural Preservation Restrictions, commonly known as development rights. It is a voluntary program whereby farmland owners apply to the Department of Food and Agriculture to sell a restriction on all or a portion of their property. After field inspections, a screening and selection process, appraisals, and approval by the Agricultural Lands Preservation Committee, the Commonwealth acquires deed restrictions, which run in perpetuity, and prohibit all activities that would destroy or impair the land for farming. Title to the land still rests with the landowner who enjoys all the traditional rights of the property ownership, such as the right to privacy, the right to lease or sell the land, and of course the right to farm the land.

Since the program's inception, more than 20,000 acres have been protected statewide, with an additional 6,723 acres currently under appraisal. During the past six years the Legislature appropriated five million dollars for each of the first four years, twenty million dollars in 1983, and another five million in 1984 for a total of $45 million to fund the program.

An active farmland preservation role by the Department of Food and Agriculture came none-too-soon for Massachusetts, as over a million and a half acres of land in farms have gone out of production in the state since World War II. During the two decades between 1951 and 1971 it has been estimated that between 11,000 and 12,000 acres of farmland were lost annually in the state because of urban conversion. One has only to drive around the countryside to witness new houses going up in fields and orchards that were recently in active agricultural production.

The loss of agricultural land in most areas of Massachusetts will probably continue because the economic incentive to sell the farm for non-agricultural uses is often too tempting for a farmer to resist, or the land is simply just too expensive for the farmer's children or neighboring farmers to purchase. It is this disparity in land value for development versus agriculture that makes the Commonwealth's Agricultural Preservation Restriction (APR) Program work.

Status of Farms Protected

All of the farms that are currently in the APR program are checked from time to time for compliance with the terms of the Preservation Restriction. At this time, all of the land currently protected remains in agricultural use.

Approximately 60 percent of the farms are in dairy production, thirty five percent are produce farms including fruits and vegetables, and approximately five percent are "other," including general livestock, flowers, etc.

Approximately 30 percent of the farms have been sold since the restriction was granted, many of which were conveyed within the family. They all remain in active agricultural production.

Proceeds from sale of the development rights were used primarily for retirement. The second highest use of the funds was for debt reduction or pay-off, and the remainder was used for improvements to the farm.

In the past seven years, the APR program has placed development restrictions on a total of 220 farms covering 20,000 acres of farmland. These farms range in size from a fifteen- acre highly intensive market garden to 340-plus-acre dairy operations. Included among these farms are apple and peach orchards, specialized vegetable farms, small fruit operations, general forage crop and livestock farms, farms producing field crops such as potatoes, cucumbers and grain corn, and diversified dairy farms. The types of farms in the Massachusetts program are an excellent cross-section of the types of food-producing agricultural enterprises in the State.

The additional funding provided under the 1987 Open Space Bill will enable APR program staff to respond to a steady and increasing stream of applicants. Numerous APR agreements have already been completed while dozens more have been in various stages of application and approval, pending the recent passage of the bill. Twenty-three applications involving 2,224 acres were under purchase-and-sale agreement as of October 1,1987, but could not be completed before the new infusion of funds. Another 25 certified offers involving 3,523 acres also had been hinging on passage of the bill. Forty-six additional farms on 7,900 acres have been under active appraisal, while (62) applications involving 4,844 acres have been on standby.

APR staff members predict that as the number of applications continues to increase, program applicants will be more closely scrutinized to assure their compatibility with program objectives. While awaiting the infusion of new funds, the APR staff has sought to elucidate and develop those objectives. One of the program's major objectives is to continue to add more restricted land in the vicinity of those farms already protected, in order to secure large areas of land for agricultural production. More and more landowners are becoming familiar with the program, and the assemblage of large blocks of protected farmland is underway in a number of towns, including Westport, Dudley, Hadley, Amherst, and others. Other program objectives include: suitability and productivity of the land for agriculture; the imminence of threat to the farmland; the economic viability of the farm; and the availability of creative financing approaches that will reduce the cost to the Commonwealth.

Cost saving financing techniques likely to receive even closer consideration by the APR staff and the ALPC in the coming year, include the following:

(1) Land banking by the owner - The Owner is willing to hold out substantial acreage which is not essential to the farming unit, for possible liquidation. By doing so, the Owner is "land banking" acreage for family residential use or sale which will reduce the cost of the APR.

(2) Compatible Development - Where a town or land trust purchases the land outright, it may be necessary or desirable to remove some of the marginal agricultural land for limited residential development in order to offset the cost of purchase.

(3) Substantial Local Contribution - Farms of high value will be expected to have a substantial local contribution. Normally this will come from the town, through town meeting appropriation or from the Conservation Fund of the Conservation Commission, or from local non-profit organizations.

(4) Cooperative Funding - Contributions, made by another state agency that has an interest in the preservation of an APR farm can help to reduce the cost of the APR for the DFA.

(5) Bargain Sale - Where the appraised value of the development rights is higher than the Commonwealth is willing to pay, the owner may be willing to sell the development rights for less and take the difference as a charitable deduction for federal tax purposes.

State-Owned Farmland: 1987 marked the eleventh year in which publicly-owned land was made available to Massachusetts farmers under the Department's State-Owned Farmland Project. Added to the project's inventory in 1987 were 24 acres of state-owned land in Lancaster and 80 acres of land in the Ware River and Wachusett Reservoir watersheds. Negotiations began with the Department of Public Health to assume leasing responsibility for 243 acres of farmland at Tewksbury Hospital, which will bring the total acres managed by the Project to over 1,000. Unless the use is dictated by special legislation (as in the case of Northampton and Foxborough), the lands are made available to farmers through a public Request for Proposals process. Farmers are selected to use the land based on their management ability, offered price per acre, and willingness to comply with any special restrictions placed on them by the agency controlling the land. Leases are for 5 years (the maximum allowed under state real property laws) and are sometimes renewable for one additional period of 5 years.

Farmland Stewardship Program: An advisory committee was formed in September of 1987 to take a broader look at Massachusetts' state-owned farmland and plan for its future use. The Committee includes members from the agricultural community and from human services and economic development agencies. The Committee will focus first on the land that was once farmed by the large campus hospitals and schools of the Departments of Mental Health, Public Health and Mental Retardation. These institutions stopped farming in the 1960's and '70's and the land has been kept open through leasing to local farms.

The large campus institutions are now being asked to plan for their current and future needs and to declare excess land surplus. This Campus Planning process is a joint effort of the Executive Office of Human Services and the Division of Capital Planning and Operations (DCPO) the agency created in 1981 to oversee all state real property matters. The Massachusetts Farmlands Stewardship Committee will develop agricultural plans to dovetail with the Campus Planning process: as lands are declared surplus, the Department of Food and Agriculture will ask that the farmland be transferred to its control to implement the Committee's plans.

Plans will be developed individually for each property, based on its agricultural capability and farm use in the surrounding area. It is hoped that new-entry farmers can get a start on some of these properties, with 30-50 year leases. Such a project is already being implemented by the New England Small Farm Institute on the old Belchertown State School farmstead.

Agricultural Land Inventory: The Bureau of Land Use is developing an inventory of all public lands used for agriculture in Massachusetts. The Bureau has begun a survey of all Massachusetts cities and towns to see how much municipally-owned land is farmed and under what sort of arrangements, i.e., lease or permit, fee simple or percentage of yield, public access permitted or not, etc.). Agricultural leasing is an effective Open Space management tool which makes good economic sense for both municipalities and for Massachusetts agriculture; and the Bureau would like to further promote its use.

Acid Rain Project: Three years of research on the effects of acid rain on Massachusetts agriculture will be completed in the spring of 1988. Grant money from the state Executive Office of Environmental Affairs was given to the environmental agencies to investigate how acid rain is affecting the quality of Massachusetts' air, water, forests and agricultural resources. The Bureau of Land Use is administering a $270,000 three-year grant for research conducted through the University of Massachusetts' Environmental Institute by Dr. Lyle Craker on the Amherst campus and Dr. William Feder at the Suburban Experiment Station in Waltham.

Researchers are finding that crop damage is caused by a complex of pollutants including acid rain, ozone, sulfur and nitrogen oxides and particulates. Damage is not restricted to urban areas where most of these pollutants are generated but hits rural areas as well. The U. Mass. researchers are finding that air pollution and acid rain can affect the ability of corn pollen to germinate on corn silk, which can reduce yields of Massachusetts' number one cultivated crop. These pollutants can also interact with common agricultural herbicides and growth hormones, causing them to act unpredictably and possibly damage crops.

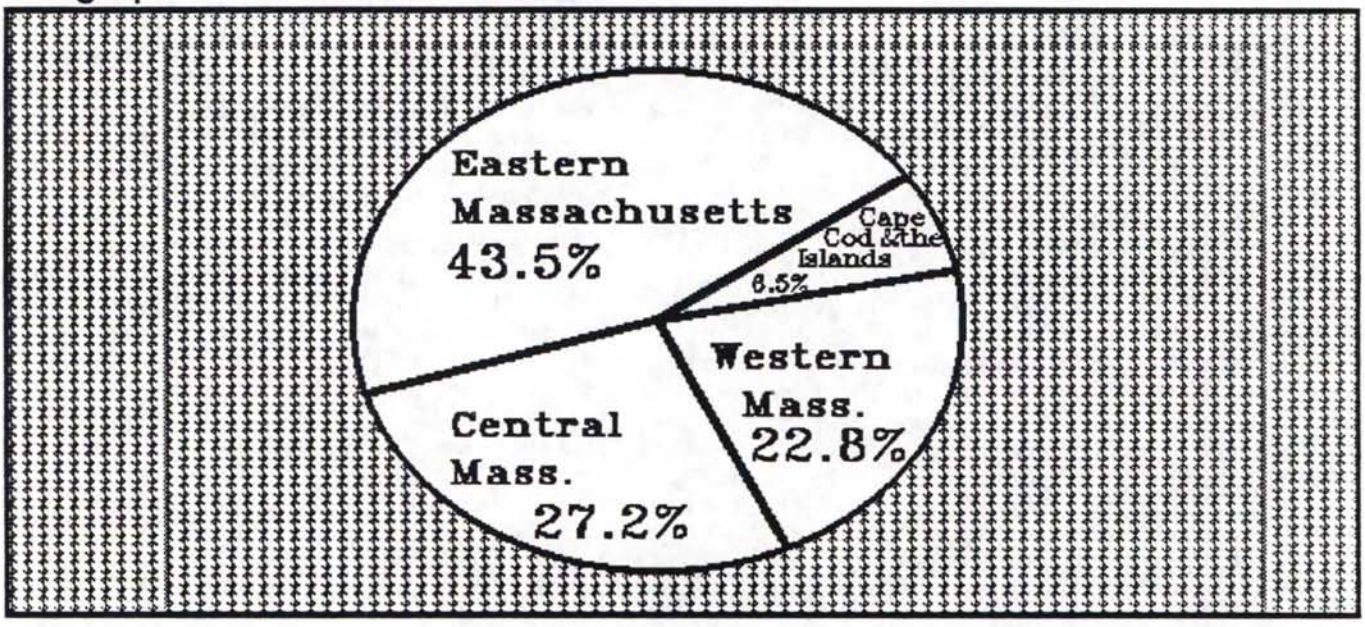
Dr. Feder has developed a pollen test for nursery stock which predicts how a plant will react to pollution stress. Nursery stock used to beautify Massachusetts' urban and suburban areas represents a multi-million dollar investment and must be able to tolerate polluted conditions. To field-test all species for pollution tolerance would require 50 years, thousands of acres of land and cost millions. Dr. Feder's pollen test is cheap, accurate, and produces results in 24 hours.

Agricultural Preservation Restriction Program

TOTAL (1980-1987)

- **farmland protected:** **219 parcels, 19,891 acres**
- **funds appropriated:** **$45,000,000**
  1980-1987

Geographic Distribution of APR Dollars



Regional Distribution of Agricultural Preservation Restriction (APR) Dollars Invested in Massachusetts Farms, 1980-1987

Region	Distribution of $42,814,860 invested in APR Farms by Region (percent)	Distribution of 219 farms and (19,891 acres)	Average acre cost for each region
Western Mass. (1)	$9,763,525 (22.8%)	89 (7910)	$1234
Central Mass. (2)	$11,677,100 (27.2%)	54 (6433)	$1815
Eastern Mass. (3)	$18,596,735 (43.5%)	71 (5098)	$3648
Cape Cod and the Islands (4)	$2,777,500 (6.5%)	5 (450)	$6172

Percent Distribution of APR Dollars for Each Commodity Group in Each Region

REGION	LIVESTOCK dairy/equine/other	Percent Livestock	CROPS forage/vegetables/tree fruit/small fruit	Percent Crops
Western Mass. (1)	41%/0/2%	43%	36%/16%/4%/1%	57%
Centeral Mass. (2)	42%/0/0	42%	18%/5%/32%/3%	58%
Eastern Mass. (3)	29%/7%/7%	43%	20%/25%/6%/6%	57%
Cape Cod and the Islands (4)	17%/0/29%	46%	0/54%/0/0	54%

(1) Western Massachusetts: Berkshire, Franklin, Hampshire, and Hampden counties
(2) Central Massachusetts: Worcester County
(3) Eastern Massachusetts: Essex, Middlesex, Suffolk, Norfolk, Bristol and Plymouth counties
(4) Cape Cod and the Islands: Barnstable, Dukes and Nantucket counties

Source: Department of Food and Agriculture, February, 1988

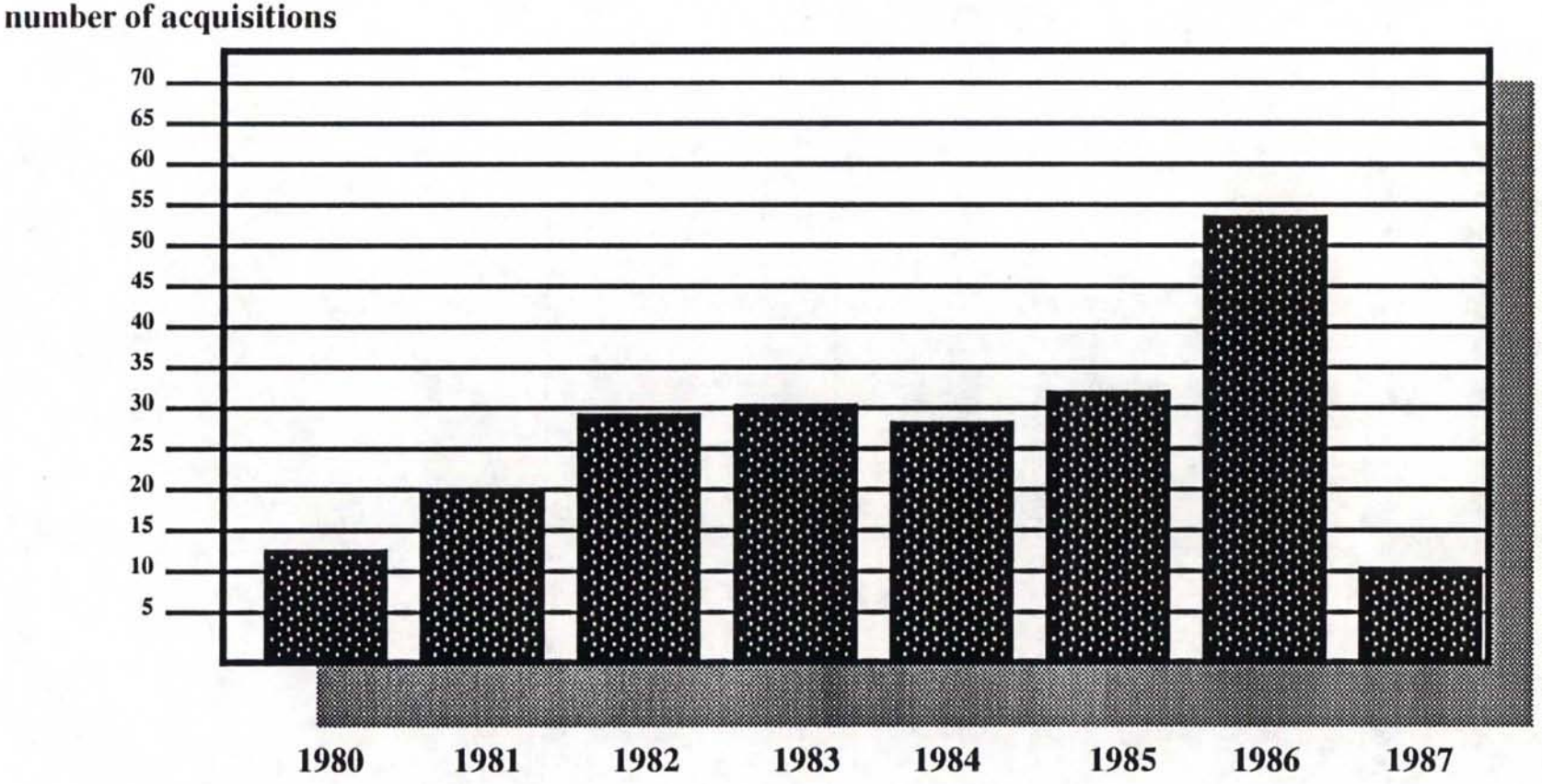
Chronological Summary of the Agricultural Preservation Restriction Program, 1980-1987

year	parcels enrolled	acres	funds invested	avg. acre cost
1980	12	1144	$2,376,325	$2077
1981	20	1675	$3,466,900	$2069
1982	29	2499	$3,107,775	$1243
1983	30	3231	$5,033,060	$1557
1984	28	2334	$4,430,200	$1898
1985	31	3338	$5,070,900	$1519
1986	54	4271	$17,078,700	$3998
1987	15	1399	$2,251,000	$1609
TOTAL	**219**	**19,891**	**$42,814,860** (1)	**$2152**

(1) Includes state and municipal funds

Source: Department of Food and Agriculture, February, 1988

Massachusetts Agricultural Preservation Restriction Program



source: Massachusetts Department of Food and Agriculture

Massachusetts State-owned Farmland Leasing

In Massachusetts, 84 farmers or agricultural educational institutions are leasing 4,480 acres of state-owned farmland in 63 locations across the state. Seven agencies issue these leases or use permits. The Department of Food and Agriculture leases land under its care and control and also leases land for other agencies under Chapter 20 of the Massachusetts General Laws.

The Massachusetts Farmlands Stewardship Committee, formed by the Department of Food and Agriculture in September of 1987, is looking at additional ways to protect and improve the management of state-owned farmland. One technique under consideration is the long-term (30 year) leasing of state-owned land to farmers. This is now being done under the Department of Mental Retardation's lease of the Belchertown State School farmstead to the New England Small Farm Institute.

Leasing Agency	Acres leased	Farmers/institutions renting	Locations
Food and Agriculture	981	16	12
Fisheries and Wildlife	1,833	40	24
Environmental Mgt.	592	18	18
Massport	166	1	1
Corrections	80	1	1
Mental Health	294	3	3
Mental Retardation	534	5	4
TOTAL	**4,480**	**84**	**63**

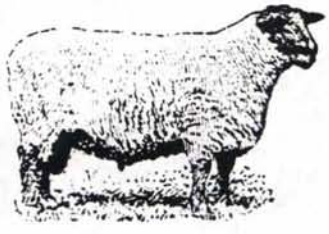
Division of Animal Health

Mabel Owen, Director

The control and/or eradication of all domestic diseases which have consumer cost or public health impact is the goal toward which the Division of Animal Health, with both clerical and field personnel, works. With an office staff of seven, whose duty it is to maintain animal health records, and a field staff consisting of four Veterinarians, four Animal Health Inspectors, five Poulty/Poultry Products Inspectors, and one Supervisor of Riding Academies, the Division institutes and records vaccinations, tests, inspections, and other surveillance procedures. Covered are some 130,000 cattle, more than 50,000 swine, almost 36,000 horses and ponies, more than 20,000 sheep and goats, and close to three million birds. Maintained on well over 30,000 premises, the inspecting and record keeping workload is very large. Some computerization has been possible, with small desktop personal computers especially well adapted to our diversified programs. Each disease must be treated individually, within its incidence, with vaccination, if any, testing, and surveillance procedures tailored to fit the numbers of farms or animals involved as well as the rate of spread which might be expected. With many of the older disease threats (such as Tuberculosis) considered eradicated in Massachusetts, priorities are now turned toward those which, by virture of both interstate and international animal movement, now threaten the livestock population in Massachusetts. These have included Avian Influenza in 1986, and the salmonellas and swine pseudorabies (PRV) in 1987.

The collective value of the livestock in this state now exceeds hundreds of millions of dollars. Its use of land provides both green space and an extensive tax base. Its production of safe, high quality food is a source of pride to our farming community as well as an important segment of our economy. Given our climate, our short growing and grazing seasons and the high value of our land, only healthy disease-free animals can be maintained. With the cooperation of all the livestock interests - breeders, growers, dealers, sellers, veterinarians, and processors - the Division of Animal Health seeks to maintain this state of livestock health under Chapter 129 of the General Laws, sections 1 through 48, and certain other applicable chapters and sections.

Domestic animals move interstate and internationally via Health Chart and/or Permit. Included for each and every animal must be its own nine letter and number identification, as well as the negative reports for up to half a dozen individual tests, conducted in various laboratories. These records are maintained for up to five years, and must be filed so as to provide trace-back capability to farm of origin in the event of a disease outbreak. This commerce is extensive, and the record-keeping must be accurate. Our office staff is both talented and conscientious. Their understanding of most animal diseases is extensive. In addition, they must have a working knowledge of import-export procedures and the sources of tests rquired for all states and many countries. At the end of FY 1987, two positions remained unfilled - one in the office staff and one in Poultry inspection.



The Tuberculosis Program: All cattle in Massachusetts are scheduled to be TB-tested at state expense, once every three years. Each of these are complete herd tests and require two visits, by an Accredited Veterinarian, one to inject test material (Tuberculin) and a second, 72 hours later, to read the result. Almost every producing dairy cow in the Commonwealth is actually Tuberculin-tested annually, to fulfill the requirements for the milk-marketing laws in nearby states. Since the interim-year tests are conducted at owner expense, this requirement has become an interstate tariff on milk produced here. New York's TB-program requires a test every five years; Massachusetts and most of the rest of New England is on a 3-year rotation. Connecticut remains the only state in the union with an annual-test requirement. Despite efforts on the part of the Massachusetts Farm Bureau Federation and the Division of Animal Health, that state appears unlikely to relax its rigidity with regard to the TB-testing of any cattle whose milk, either wholly or in part, is marketed in Connecticut. Although Massachusetts maintains its dairy-herd inspecting rotation, it does not TB test some small one or two-animal beef "herds". Since these are maintained for meat, and generally sent to slaughter before the 3-year period is up, their inspection at slaughter is deemed sufficient. Although human tuberculosis is still found, generally in inner-city situations, this disease has not been found in a Massachusetts herd in over 9 years. Massachusetts is rated "Accredited Free" of Tuberculosis.

The Brucellosis Program: As of the end of FY 1987, Massachusetts marks its 50th month as a "Brucellosis Free" state. This rating (and the longest period of Brucellosis-freedom in Massachusetts history) is shared by 24 other states, almost all of which are in the North and Northeast. This coveted status frees our cattle to move

into many areas without further test, and adds materially to the value of our dairy breeding animals. Free status requires certain state-paid programs: Cattle dealer licensing and reporting, heifer calf vaccinations (aged between 4 and 8 months), the 45 to 60 day retest of all imported cattle, and an office and field staff capable of making and keeping accurately the records that will permit a 100% traceback capability for any suspect animal. Brucellosis remains an important disease in the South and West, where more than 3,500 quarantined herds remain. As an importing state, and with greatly increased cattle movement, Massachusetts must be unceasingly vigilant against the re-entry of Brucellosis. The programs continuing for Brucellosis-freedom continue to have first priority.

Swine Brucellosis: At the end of 1987, no Massachusetts swine herds were known to be infected. Since our active Veterinarian staff remains at three, it is doubtful that we will be able to accomplish the full-herd testing required to officially validate the state, but actual control of swine brucellosis is at it best level ever. Urbanization has resulted in the closing of many swine feed lots in Middlesex, Essex, Norfolk and Bristol counties. A widespread changeover from garbage to grain-feeding has failed to halt the decrease in pork production here. Waste-food recycling through swine is not generally accepted by suburban dwellers.

Other Swine Diseases: Since Pseudorabies (PRV) remains endemic in most of the mid-west, Pork Producers there have made recent requests that New England states permit entry here of vaccinated feeders. Massachusetts animal health authorities feel that this should not be permitted, at least until a reliable test is available that will differentiate between vaccination and disease titers. Some interest exists in genetically engineered vaccines, but these are yet not in either production or trial. Other exotic swine diseases pose a threat to this country. African Swine Fever leads this list, though Foot and Mouth Disease remains a similar threat. Between commercial air and sea travel and an almost negligible inspection system at our ports, the danger of bringing contaminated food products onto our farms is constant. State-federal "READEO" (Regional Emergency Animal Disease Eradication Organization) exercises are conducted each year against this threat. The Division of Animal Health takes part in these test exercises.

Pet Shop Licensing: Designed to permit the humane housing of animals in Pet Shops and to satisfy the consumer's wish to purchase healthy and disease-free pets, this program is one of our oldest, as well as the one which has been the most difficult to manage. Almost 10,000 puppies and kittens are imported into Massachusetts every year and almost every one is sold in a Pet Shop. These animals are heavily traumatized before they arrive here. They are weaned, sent to a wholesaler, separated into lots and shipped east, in a matter of days, sometimes only hours. Laws govern their ages, their inspection for disease, and their mode of transport, but these tiny animals are extremely fragile and some do not survive, all too frequently leaving behind them a trail of emotional involvement. Public Hearings were held in FY 1987 and new Rules and Regulations went into effect, clarifying the period of isolation following importation and setting up both regualar Veterinary examinations and a clear system of return and rebate of purchase price. Customer complaints have been minimal during the first four months the new Rules have been in effect.

On the plus side of Pet Shop Licensing, the requirement that a full record of sale of all large psittacine birds (including name and address of purchaser) be maintained for one full year has made it possible for us to have a 100% successful traceback for every bird sold here which was exposed to VVND prior to its arrival. Since this disease, also known as Exotic Newcastle Disease, has the capability of wiping out a nation's poultry industry, our vigilance is not misplaced. Licensed Pet Shops dealing in parrots have been both helpful and cooperative in this effort.

Pet shop licensing and inspections places a very heavy burden on our small staff. Given the heavier human-health impact cattle and swine diseases have, it is increasingly difficult to justify this particular program.

Equine Program: Relatively few licensing programs are financially self-sufficient, but our 262 Riding Stables/Schools, 965 Riding Instructors and 16 Horse Auction/Transporter licenses generated $29,556 in FY 1987. These programs, two inaugurated in 1974, have resulted in a noticeable up-grading in the quality of riding instruction offered in this state. Both humane and consumer interests meet, and horseback riding, as a sport without age or even physical ability barriers, has prospered. We now have a number of riding schools with extensive programs for the handicapped. Therapeutic Riding has long been popular in Europe, and daily proves its value here. Although the number of horses and ponies in Massachusetts remains relatively static, the quality of the animals raised, trained and shown here rises each year. All six of New England's largest breed shows are held in Massachusetts. One of these, the New England Regional Morgan Show, attracts over 1,600 animals from more than 20 states and Canada.

The Division of Animal Health maintains the records for all Coggins Tests (for EIA, Equine Infectious Anemia) and monitors the quarantine status of a small number of reactor animals in private or research ownership. Fiscal year 1987 saw the beginning of a small, but ominous rise in the incidence of this incurable disease on the East Coast. Thought to be the result of rising prices for light horses, and subsequent increase in numbers from the deep South where the disease is heavily endemic, the disease increase was minimal in Massachusetts. Greater in surrounding states, it has resulted in a law change in at least one nearby state.

Similarity between the viral agents that cause equine EIA and human AIDS has greatly increased the interest in EIA research, some of which is being conducted in Massachusetts at this time.

Guard Dog Licensing: Fy 1987 was the fourth year of licensure for this Program, which is designed to assure humane handling and training for guard and sentry dogs. The Animal Rescue League of Boston (ARL) and the Massachusetts Society for the Prevention of Cruelty to Animals (MSPCA) provide regular inspections of these facilities, accompanied when necessary by divisional Veterinarians and Animal Health Inspectors.

Hearing Ear Dog: Licensing for these kennels was mandated by law in 1985. No Rules and Regulations have been promulgated and no licenses issued. Requests by the Division of Animal Health for personnel qualified to direct a program have been denied. Since the only two kennels engaged in this training are regularly inspected by the humane agencies, this program continues to have low priority.

Rabies Control: Public Health law in Massachusetts requires that hospital and/or treating physicians notify local health boards where animal bites occur. The local Animal Inspector or dog control officer issues a ten-day quarantine on the biting animal - usually a dog. Rabies surveillance is maintained, although almost all dogs are found to be vaccinated. The increasing incidence of this disease, together with a very close to 100% fatality rate in humans, makes rabies control an important program. Combining the interests and laws of the departments of Public Health and Animal Health have been successful and workable. The Division holds two meetings per year for Town Animal Inspectors or Dog Control Officers. Rabies control is always the leading subject for discussion. The division also makes available a number of print-outs dealing with rabies.This disease is both rightly feared and rightly emphasized. Travel abroad, especially in Africa where rabies is widespread, should carry with it some consideration for human immunization. The new human diploid cell (HDC) vaccines are effective. Your physician should consult Massachusetts Department of Public Health for details.

Poultry Programs: Following a small but disastrous one-flock outbreak of Avian Influenza in 1986, the Division of Animal Health instituted a number of surveillance procedures against this industry's crippling disease. All Pullorum-Typhoid blood tests are now monitored for AI antibodies. These tests are provided without added cost to the poultry breeder or show flock owner and qualify these flocks for both showing and interstate transport. The disease has not reappeared in any private or commercial flocks in the Northeast, but positive birds in very small numbers have routinely been found in the live-bird sales and auctions in and around New York City and nearby New Jersey. No ban was placed on showing for calendar year 1987 and a reciprocal agreement was made between all of the New England states to honor each other's Pullorum-AI test certificates. Expose-type television programs alleging that poultry products and eggs were heavily salmonella-contaminated led to a New England-wide survey for this disease. Over five thousand eggs and several hundred birds and enviromental samples were collected from the area's producers. No evidence of Salmonella Enteriditis, the serotype implicated on the telecast, was found. Division of Animal Health Poultry Inspectors collected samples for the section of the survey done in Massachusetts.

Shows, Fairs, other Activities: Since every animal exhibited at a show or fair must be disease-free, either a staff Veterinarian, an Animal Health Inspector or a Poultry Inspector covers each livestock fair. Our special health requirements for all species appear in each prize list and we continue to receive the full cooperation of the Division of Fairs as well as each Fair Secretary. Agricultural fairs are truly livestock's "show window", the best way to present stock to people who may be six or seven generations away from having been raised on the farm. Milk isn't "born" on a supermarket shelf and it is of the greatest importance that people realize the very high quality of food that is produced in Massachusetts. They can see this exhibited at almost any fair.

Additionally, our field staff personnel is professional in every way. Veterinarians and inspectors regularly attend disease seminars, livestock breeding symposiums and regulatory officer meetings throughout the year.

Pulling Horses and Oxen: Since Massachusetts law forbids the use of drugs in pulling contests, these meets are monitored by staff veterinarians and random samples are tested at the Racing Commisssion Laboratory in Jamaica Plain. For the fifth season, no 'positives' were found. Massachusetts has a reciprocal agreement whereby teamsters, if found guilty of drugging in another state, are forbidden to compete here. The "draws" are popular fair attractions and enjoy considerable spectator support.

Sales/Auctions: Each of five regularly-scheduled sales is inspected by a Veterinarian or an Animal Inspector, usually both. A dairy sale barn operated by the Peila Bros. in Bernardston has been added in FY 1987. This business, formerly located in Connecticut, is limited to scheduled sales of dairy cattle.

Sheep and Goats: Since the use of goat milk appears to be increasing, so also is the number of tuberculosis and brucellosis tests conducted on them. Although goats are thought to be essentially free of both diseases, many owners, and most local health boards favor a testing program. A recent survey for a dangerous nematode-type parasite in sheep (Nematodirus battus) revealed positive flocks in northern New England and New York, but none were found in Massachusetts. This disease is European in origin; only recently found in this country

Problems.

Staffing: The three positions lost in 1985 have not been replaced. In addition, three positions (two clerical, one field) remain unavailable to us. At the same time, the number of premises on which animals are housed, and the number of diseases for which tests and other surveillance procedures must be conducted have increased materially. If the staffing situation cannot be remedied within FY 1988, the Division of Animal Health will have no choice to limit its work solely to the Tuberculosis and Brucellosis control programs.

Positions: Some improvements in career ladder programming has been requested annually since 1980. It is not possible, under present staffing requirements to fill our needs for technical expertise, using current pay scales.

Diagnostics: Massachusetts remains the only state whose Division of Animal Health has no large-animal diagnostic capability of its own. Federal funding problems resulted in the closing of the state-federal brucellosis laboratory at Waltham. Moving this facility to New Hampshire proved totally unworkable. Fortunately, an interim purchase-order agreement was made by USDA with the Department of Animal and Veterinary Sciences at U-Mass., Amherst, but this is at best, a stop-gap arrangement. Prompt and accurate disease diagnosis is the foundation upon which every disease-control decision is made. In FY 1987 the Division of Animal Health funded a small contract ($23,000) with above-mentioned Department in Amherst. A minimum of $250,000 is needed. Some of this could be recovered through laboratory fees, but the need itself is crucial.

Conclusion: The 20 people who are currently employed by the Division of Animal Health are justifiably proud of the part they play in maintaining Massachusetts as Pullorum-Typhoid Free, FREE in Bovine Brucellosis and Accredited-Free in Tuberculosis. No other state, with our animal numbers, accomplishes these goals with such a small staff. We wish to acknowledge the help we have had from the following people and agencies:

Governor Michael S. Dukakis, Secretary of Environmental Affairs James Hoyte and Commissioner of Food and Agriculture August Schumacher, Jr. for their continued support. A number of people in the legislature, and especially the Committee on Natural Resources, for their interest and cooperation. Dr. William Smith, area Veterinarian in Charge, USDA-APHIS for a great deal of assistance. Massachusetts Farm Bureau Federation, the Animal Rescue League of Boston and the Massachusetts Society for the Prevention of Cruelty to Animals for advice and support. Dr. George Faddoul of the Suburban Experiment Station and Dr. Donald Black of the Department of Animal and Veterinary Sciences, both of the University of Massachusetts, for their invaluable help in diagnostic services. The practicing large-animal Veterinarians in this state, the purebred associations, the cattle and swine dealers, the sale-barn managers and the entire livestock farming community for their commitment to our goals of disease-free status.

A disease-free status is attainable only when everyone concerned believes in it and works at its accomplishment.

Division of Equine Programs

Peter Bundy, Director

Thoroughbred Breeding Program

Peter Bundy, Supervisor

The thoroughbred breeding industry contributed some $35 million to the Massachusetts economy in 1987, an increase of more than 200 percent over the past five years. During the same period, the amount of farmland devoted to thoroughbred breeding climbed 32 percent to 7,000 acres. Clearly, the breeding and raising of throughbred horses has become a significant force in the Massachusetts economy and a major contributor to the cause of open-space preservation.

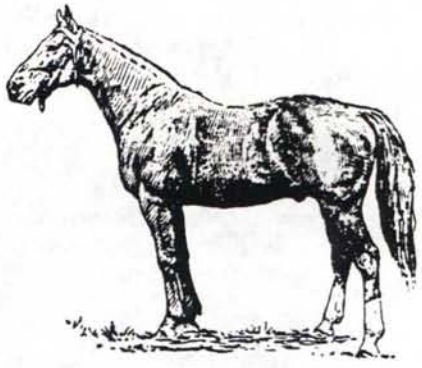
Recognizing the importance of the industry, the Massachusetts Thoroughbred Breeding Program in 1987 continued to encourage and provide incentives for the breeding and raising of thoroughbred horses in the Commonwealth. Enhanced by legislation passed in 1985, the program now receives one half of one percent of the total amount wagered at Suffolk Downs. That money is used for breeder, owner and stallion owner incentive awards payable to qualified participants in the breeding program.

Breeder Awards: At Suffolk Downs and at two agricultural fairs in Massachusetts, throughbred breeders received $287,407 in awards in FY 1987. A breeder is the owner of a mare at the time of her foaling. If certain requirements are met, the breeder becomes eligible to receive breeder incentive awards of 25 percent of the purse won in first-, second-, and third-place finishes at licensed pari-mutuel tracks in Massachusetts.

Owner Awards: Owners of Massachusetts throughbreds received $110,671 in incentive awards during FY 1987. The owner of a Massachusetts-bred horse is the person who owns the horse at the time of its racing. Owner awards are 20-percent of purses won in first-, second- and third-place finishes at licensed tracks in Massachusetts. Owner awards are paid only in open competition. No owner awards are paid for horses running in races restricted to Massachusetts-bred entrants.

Owners of Massachusetts stallions gleaned $74,958 in awards during the past fiscal year. Stallion owner incentive awards of 15 percent of the purse are paid to owners of registered Massachusetts thoroughbred stallions that sired such finishers. The owner of the stallion at the time of service to the dame of such a finisher is the recipient.

In the past, Massachusetts registered Thoroughbreds have gone to post 1,408 times at Suffolk and agricultural fairs. These starters have accounted for 33 wins, 131 seconds and 133 third. Stallion owners reported 441 mares bred to Massachusetts stallions in the same time period.



Stakes Racing Program: In the past fiscal year, 22 stake races, with total purses of $600,000, were offered for eligible Massachusetts-bred horses. Of that amount, the program funded $387,500, with the Suffolk Downs Horsemen's account providing $212,500 These restricted races were offered to horses of varying age and gender, and were run over varying distances and under varying conditions.

Standardbred Breeding Program

Robert E. Bennett, Supervisor

The Massachusetts Standardbred Breeding Program supports an industry which has become increasingly important to the economic and environmental vitality of the Commonwealth.

The breeding of standardbred horses in Massachusettss protects large tracts of plush, fertile and scenic farmland from development. Our current census shows that 90 farms on 6,000 acres are dedicated to the breeding and training of standardbred horses.

The standardbred breeding industry provides more than 1,500 jobs in the Commonwealth.

Breeders of standardbred horses also help support the state's dairy industry by purchasing high-quality hay produced by Massachusetts dairy farmers. In doing so, they contribute to the state's efforts to protect dairyland from rampant development.

In 1987, the standardbred Agricultural Fair and Breeding Fund Committee, in conjunction with the Commissioner of the Department of Food and Agriculture continued to pursue new ideas and possible improvements for the standardbred industry and the state's breeding program. The state spent $332,000 during the fiscal year on the promotion of standardbred farms.

Some 240 standardbred mares were bred to the 60 stallions registered with the Department of Food and Agriculture and the Massachusetts Standardbred Breeders and Owners Association. The Department registered 220 yearlings with the Massachusetts Sires Stakes program. Sires Stake races, which feature two- and three-year-old foals of mares bred to registered Massachusetts stallions, were held at eight fairs last year, with 98 pacers and 30 trotters competing. A total of 120 races took place at those eight fairs.

Standardbred farmers gain income from the daily fee paid them by owners of mares brought to their farms to be bred to their stallions. There is also a stud fee paid to the farm for the services of the stallion. Finally, the standardbred farmer has a great opportunity for income through breeding his own mares and the subsequent selling or racing of the offspring.

Under Chapter 580 of the Acts and Resolves of 1985, funding for the Standardbred Breeding Program was increased from one half of one percent to a full percent of the total handle at the states harness tracks, subject to appropriation. The industry added $80,000 from sustaining and entry fees.

Greyhound Breeding Program

Robert E. Bennett, Supervisor

The breeding of greyhound racing dogs in the Commonwealth got off to running start in 1987, with more than 400 Massachusetts-bred greyhounds registered for racing from July to the end of the year. During the same period, some 60 greyhound studs were registered with the agency. While the program has just begun, it is anticipated that more than 2,000 greyhound pups per year will be registered with the Department of Food and Agriculture.

Under Chapter 277 of the Acts and Resolves of 1986, the Department of Food and Agriculture's Division of Equine Programs was chosen to administer the state's new Greyhound Breeding Program. The program is funded by one-tenth of one percent of the total handle at the Wonderland and Raynham/Taunton greyhound racetracks, up to a maximum of $300,000 per year.

As a result of informational and public hearings held earlier in 1987, the official rules and regulations for the Greyound Breeding Program were approved and published by the Secretary of State. As of September 1, 1987, the Department commenced breeder incentive awards and eventually will establish a greyhound stakes program to augment the breeder incentive awards.

Division of Fairs

Steven F. Quinn, Director

The growing network of agricultural fairs and exhibitions in Massachusetts received a healthy boost in 1987 with the hiring of Joan Hobart of Middlefield as the Department of Food and Agriculture's first Supervisor of Fairs. Other staff promotions last year also made the Division of Fairs better able to meet the changing needs of the Massachusetts fair industry.

Joan Hobart, the new fairs supervisor, is based at the agency's Western Massachusetts regional office, located on the grounds of the Eastern States Exposition in West Springfield - the largest of the more than 100 agricultural exhibitions held annually in the Commonwealth. The efficiency of that office also has been improved by the promotion of Alexandrine Porter-Martin as senior clerk-typist and overseer of computer programs. At the agency's main office in Boston, Ellen Hart was promoted to the job of administrative assistant in 1987, handling division matters in the absence of the Director.

Program Expenditures: From a total appropriation of $693,069 for Division of Fairs activities in fiscal year 1987, $375,000 was allotted for prizes; $140,000 for rehabilitation; $50,000 for exhibits and grants to agricultural youth programs; and the balance of funds for administrative purposes.

Fairs Rehabilitation: The division's ongoing effort to improve buildings and grounds at fairs statewide was aided in FY 1987 by a $50,000 increase over the previous year's appropriation. Priority was given rehabilitation projects at fairs in Adams, Bolton, Greenfield and Barnstable, as well as the Boston Flower Show.

The Big E: Despite an opening-weekend downpour, a record 993,000 visitors came through the gates of the 1987 Eastern States Exposition in West Springfield in September. The Massachusetts Building looked better than ever, thanks to a fine effort from the Division of Capital Planning and Operations and members of the Western Massachusetts Nurserymens' Association. The building now boasts new roofs, new paint, new railings, new lights, and new landscaping--once again dignifying our presence on the Avenue of the States. New exhibits in 1987 included expanded models of farmers' markets, local wine products, the Massachusetts Veterinary Association, the Massachusetts State Police, the Massachusetts Tree Farmers, and an exceptionally well-received exhibit on lobsters by the state's environmental law enforcement officers.

Workshops: Successful training workshops were conducted in 1987 for new fair secretaries, inspectors, cattle superintendents, and judges for fruit-, vegetable- and flower-growing competitions.

Wool Board: The Division continued its involvement in 1987 with the Massachusetts Wool Board. Producers last spring pooled together their wool, sent it out of state to be processed into blankets and then sold their goods for above-wholesale prices. In that way, participating Massachusetts shepherds earned larger returns for their clips. A similar effort to market lamb meat collectively continued to be hindered in 1987 by the lack of an appropriate packing facility within the state. Still, local growers continue to do well individually with their freezer-trade businesses.

Computerization: The Division in 1987 began working - and will continue to work ambitiously in 1988 - on developing a computer system that can be used by fairs statewide. The program is being co-sponsored by the Massachusetts Fairs Association and the Cooperative Extension at the University of Massachusetts. The computers can be used to store the names of exhibits, exhibitors, print classes, summaries of individual placings and other information, as well as compute prizes, print mailing lists, cut checks and complete other paperwork.

Division of Regulatory Services

Lewis F. Wells Jr., Director

Working in the field of agricultural regulation in this time of considerable stress on the Massachusetts farming community brings to mind Mark Twain's too-true remark about the weather in New England. To paraphrase the author, if you don't like it, wait a minute. While the regulatory changes we encounter come each day, we are in times that dictate reasonably frequent change.

In the areas of pesticide regulation, dairying and milk marketing, change clearly is in the air.

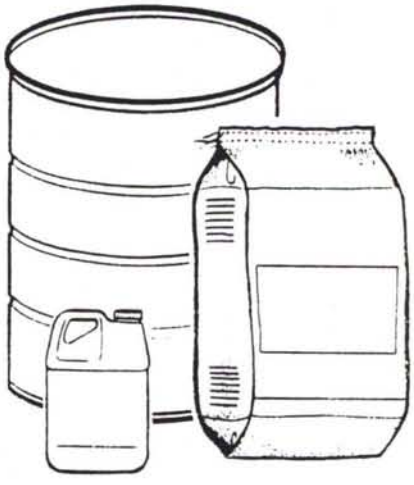
Pesticide Regulation: Change has been the hallmark of the pesticide regulations field in the United States since 1972 when the Federal Insecticides, Fungecides, and Rodenticide Act was greatly amended (a change which began in Massachusetts in 1962). Throughout FY 1987 rewriting the Massachusetts statute on pesticide regulations has taken up much (too much, in my opinion) of the time of the Commissioner and his staff. Change in the law will come, but only after real and perceived problems are separated and rational solutions are devised to address the real problems.

The most encouraging changes in the area of pest management have been brought about by the Department of Food and Agriculture and the University of Massachusetts through Integrated Pest Management (IPM). With solid accomplishments in the past and the prospect of greater resources in the future, the inevitable result will be further accomplishment.

Dairying & Milk Marketing: The need for milk in the Boston metropolitan area, where most of the milk-handling industry in New England is located, has placed greater demands on our farm inspection force and triggered a debate over how to solve the "dairy problem" in the Northeast. Over-order pricing is in place. Is this the answer? Or does the answer lie in suggested alternatives: a rise in the price in the Boston Order, premiums, a Northeast Order, etc? Can we devise an answer which is equitable to all involved in the problem - farmer, handler, and consumer?

Changes also are happening, though perhaps not as noticeably, in other areas of agricultural regulation in Massachusetts:

Quality Control: In the area of Farm Products, changes do not occur as abruptly. This activity is varied (Seed, Feed, Fertilizer, Apples, Potatoes, "Native Law" Enforcement, etc.) and rather unspectacularly detailed as are most consumers' protection operations (from the standpoint of volume and dollars spent, the consumer is the farmer). However, in this area there has been a change which, although hidden from the public eye, is of great importance - requiring by law that the Seed, Feed, and Fertilizer Laboratory at the Massachusetts Experiment Station, U Mass, Amherst which by law gives analytical support to Department of Food and Agriculture in this regulatory area. In addition, the University has agreed to arrest the gradual erosion of the staffing of this laboratory which has gone on for a number of years. We can now say we have good inspectional capabilities, a reasonably equipped laboratory, as well as adequate and competent analysts. This adds up to capabilities in this area of work equalling or exceeding those in the other New England States.



Apiary Inspection: Hardly noticed except in the agricultural community is the apiary industry. In Massachusetts it is small compared to many other states. We produce a modest amount of honey, but the largely unnoticed value of the apiary industry is pollination by bees - a necessity with most of our crops. The changes here are threats from the outside - Trachael mites, Africanized bees, and Varroa mites. Trachael mite has not been the problem we first anticipated, although we must do many inspections to remain in control of the situation. Africanized bees can be placed in the same category. The big change (it could be characterized as a challenge) is to prevent the Varroa mite from reaching Massachusetts if possible. If it does reach here we have a problem in that there is no pesticide registered to control these mites. Quarantine will be difficult with the degree of bee colony movement in Massachusetts.

Change will occur. If we can manage change - push it in the direction judged to be beneficial to the Massachusetts agricultural community in particular and Massachusetts in general - we move forward. If we just cope with change we remain where we are or fall back.

Bureau of Dairying

David L. Sheldon, Chief

The Bureau of Dairying in 1987 continued to carry out its mandate as laid out in Chapter 94 of the General Laws. The law specifies that for milk to be sold in this state, the Bureau of Dairying, as authorized by the Commissioner, must first inspect the producers and issue Certificates of Registration to them. In addition, we must inspect and issue permits to any in-state milk plant or out-of-state milk and pasteurization plant that wishes to sell milk in Massachusetts.

In all cases, the dairy farms and the milk plants must meet the regulations before approval is given and a certificate or permit sent out. This is where the real crux of our work exists and where its importance to the consuming public becomes quite evident. Every working day our inspectors are striving to get problems corrected on the farms and plants in their assigned area. The result of this work is a better quart of milk for the consumers of Massachusetts.

1987 Dairy Highlights: 1987 was another year of great change in the dairy industry. Farm numbers continued to decline as the Federal Dairy Termination Program - also known as the Whole-Herd Buyout - removed dairy animals from participating farms.

Massachusetts lost 97 dairy farms from July 1, 1986 to June 30, 1987, bringing the total number of dairy farms in the state down to 545. While many of those closings were a result of the buyout program, others ceased production for other reasons, ranging from the lack of sufficient labor to development pressures. Our farm losses to the Dairy Termination Program ended September 30, 1987, the date on which the program concluded.

Although Massachusetts lost many dairy farms in 1987, we also saw a steady increase in average herd size and a corresponding increase in production - both of which are very encouraging.

The price farmers received for their milk declined in 1987. after a brief rise in 1986. By years' end. it was clear that the long-expected drop in federal price supports of 50 cents per hundredweight would take effect on January 1, 1988.

Regulations: The Bureau of Dairying continued to work with the Massachusetts Department of Public Health's Division of Food and Drug in 1987 on new regulations which will set the standards for milk, following the product from the processing plant to the consumer. The proposed regulations have been to public hearing and hopefully will be adopted in 1988.

Dairy Farm, Milk Plant, and Pasteurization Plant Inspections: This program also forged ahead in 1987. We inspected each producer in the Commonwealth at least twice, and all of our out-of-state producers at least once during the course of the year. As of June 30, 1987, there were 545 active dairy farms in Massachusetts, plus more than 6,000 dairy farms under inspection out of state. During the same period, we had eight milk plants under inspection in Massachusetts, plus 21 milk plants and 22 pasteurization plants under inspection out of state.

Total Dairy Farms Inspected:	7,937
Approved:	6,340
Not Approved:	1,597
Dairy Farms Reinspected:	1,695
Approved:	1,361
Not Approved:	334
Farms Receiving 10-Day Notice Letters for Failure to Correct Violations:	231
Hearings Held on Violations:	13
Producers Excluded for Failure to Comply After 10-Day Notice and/or Hearing:	21
Producers Reinstated:	9
Other Farm Visits	1,527
Total Milk Plants Inspected:	59
Approved:	50
Not Approved:	9
Total Dealer Visits:	295
Plants Spot-Checked:	10

Milk Flavor Program: In April of 1987, we were fortunate to have Leo Cormier - the state's official milk-flavor expert - transferred to the Bureau of Dairying staff from the Bureau of Markets. Leo has worked on milk flavoring for many years, and we are combining his work with our inspection activities to provide a more comprehensive program to all of our dairy farmers and milk plants.

In fiscal 1987, 17 milk plants participated in the Milk Flavor Program, with a total 6,027 samples taken. Participating plants provide both raw and finished-product samples on a once-a-month basis for flavoring. In carrying out the milk flavor program,we emphasize that it is not a regulatory program, but a voluntary one designed to improve the flavor of Massachusetts milk.

Mastitis Program: This program in 1987 continued to provide a much needed service to the dairymen of this state. It is a free, voluntary program with approximately 300 producers participating in 1987. The main thrust of the Mastitis Program is the elimination of Streptococcus Agauctiae and assistance for all participating dairymen in the maintenance of a Streptococcus Agauctiae-free herd.

In addition, the Mastitis Program assists dairy farmers whose milk exceeds the action level of 1,000,000 somatic cells . As a whole, the somatic cell level in Massachusetts raw milk is good. Recent records covering roughly half of Massachusetts dairy producers revealed an average somatic cell level of 336,000.

- Herds Sampled: 591
- Cows Sampled: 30,289
- Samples Collected: 120,145

Interstate Milk Shippers Program: The program in 1987 had 13 separate bulk-tank units listed in the Food and Drug Administration's quarterly report. The program is of primary importance because a supply of milk must have an Interstate Milk Shipper's rating before a buyer will accept it. In addition, nearly all states require a supply of milk to be rated and have a 90-percent sanitation compliance rating, plus a 90-percent enforcement rating before a raw or finished milk product can enter a state.

- Bulk Tank Samples Checked: 41
- Bulk Tank Trucks Checked: 56
- Dairy Farms Rated Under: Interstate Milk Shippers Program: 155

USDA Dry Milk Sampling: The Agri-Mark manufacturing plant in West Springfield is the only milk plant in Massachusetts capable of producing powdered skim milk. The plant has been completely renovated and now has the capacity to handle all of the excess milk in the Agri-Mark system. In addition to powdered skim the plant has a large butter churn in place, ready to make boxed butter.

Howvever, as indicated earlier, the volumes of excess milk declined steadily in 1987, leaving little available for manufacturing purposes at the Agri-Mark plant. The return to the Commonwealth of Massachusetts from the USDA for our skim-milk sampling activities was $2,042.26 - less than one-third the amount returned in fiscal 1986. The drop reflects the reduced time spent sampling powdered skim milk.

Dealer Registration: A total of 126 milk dealers registered with the Bureau of Dairying during the 1987 fiscal year as required by Chapter 94, Section F of the General Laws.

Bureau Staffing: 11 Inspectors, 3 Senior Inspectors, 1 Supervising Inspector, 1 Chief, 2 Secretaries.

(We filled one open inspector position in the State of New York and one open inspector position in Massachusetts. Also, one inspector was tranferred to the Bureau of Dairying from the Bureau of Markets.)

Total Mileage Logged by Bureau Personnel: 330,449 miles.

Future Prospects: With our strengthened staff, we look forward optimistically to 1988 and beyond. We are confident that we will be able to handle our responsibilities and take on additional duties if necessary. To do this, we will continue to work closely with everyone affected by our regulations.

Under Commissioner Schumacher's leadership, the Bureau of Dairying is providing a valuable service to Massachusetts agriculture. Meeting the day-to-day challenges of the fast-moving dairy industry requires the high level of resourcefulness and adaptability in which the Bureau prides itself.

Bureau of Farm Products

James M. Cassidy, Chief

With the retirement of key field personnel and the resulting need to train new inspectors to accommodate its many services, the Bureau of Farm Products underwent some major changes in 1987.

The Bureau of Farm Products administers a diversified quality-control program for farm products, including the Federal-State Fruit and Vegetable Shipping Point Inspection Service. It also enforces truth-in-labeling laws for feed, seed, fertilizer and limestone, regulates certain produce-branding labeling and storage laws, and collects more than $100,000 annually in product registration and inspection fees. In addition, the Bureau publishes a weekly wholesale Apple Report listing market prices and storage-holding information.

Because of the complexity of the various regulated products, the Bureau's new inspectors were selected with a great deal of thought regarding their ability to be trained and to perform effectively in this inspectional field.

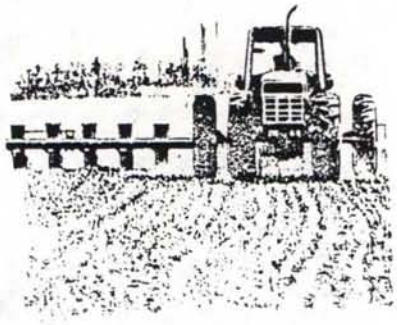
Our young field staff is now fully trained and licensed by the U.S. Department of Agriculture, which allows them to issue federal certificates attesting to the quality, condition and grade of Massachusetts produce shipments.

In addition, the inspectors analyze and test controlled-atmosphere apple storage rooms; sample feed, seed and fertilizer for testing at the West Experiment Station at the University of Massachusetts in Amherst; inspect and regulate produce at wholesale markets, retail store and farm stands for conformance to certain labeling and branding laws; keep accurate records of such transactions; and perform other related duties as required by the Bureau.

1987 also brought a remarkable improvement in the facilities and testing equipment at the West Experiment Station. All of our feed, seed and fertilizer samples are analyzed at this station for conformance with the label.

A new computer program designed to sort out the various grades and blends of fertilizer used on Massachusetts soils was introduced during this year. The Uniform Fertilizer Tonnage Reporting System (UFTRS) was developed by the Tennessee Valley Authority (TVA) and the entire program package was donated by TVA to the Bureau so that tonnage reports would become more accurate. During this year 76,266 tons of fertilizer was applied to our soils.

Fruit & Vegetable Inspection: Demand for our inspection services again was weighted heavily toward export apples, primarily those shipped to the United Kingdom and Canada. Apples also were inspected for shipment to California, where demand has been increasing steadily. All totalled, more than 250,000 bushels of Massachusetts apples carried federal-state inspection certificates for export.



The export apple inspections are of major importance, primarily because of the demand for controlled-atmosphere stored apples, including our valuable McIntosh variety and quality packs. McIntosh apples cannot be grown successfully in European countries. The controlled-atmosphere method of storing apples greatly lengthens the marketing season, allowing shipment of apples in good condition well into June.

Inspection certificates also are issued for potatoes and onions in the Connecticut Valley, and for cranberries on Cape Cod.

Feed Program: 2,173 labels of animal feed, pet food and medicated feed ingredients were reviewed and registered during the year. Samples of products offered for sale were drawn and tested at the West Experiment Station.

Fertilizer Program: 926 labels of fertilizer were reviewed and registered. Tonnage taxes were assessed and collected semi-annually. Assessment penalties in shortage of guarantee level were levied, with $7,073 in fines collected, turned back to farmers or submitted to the state Treasury.

Seed Program: 654 official samples of seed, crop seed, vegetables, lawn mixtures, flower tree and shrub seed, etc., were tested for truth in labeling. Stop-sale orders were issued on violations, involving seed packages. Seed was removed if it showed poor germination, noxious weeds, or other unfit characteristics. Violations were sent to the USDA Seed Branch for further action.

Lime Program: 35 limestone brands and grades were registered and checked for conformance to labeling during the fiscal year. 76,444 tons of lime were applied to the land, compared to 72,532 tons the previous year.

Branding Law: Inspections were made at farms and at wholesale, retail, and roadside markets to enforce apple, potato and native laws. Misbranded products were relabeled or removed from sale. More than 3,000 retail stores and many packing-house operations were inspected.

Storage Laws: Records are kept on cold-storage and controlled-atmosphere apple rooms in order to check compliance with storage laws, thereby allowing those products to move into certain market areas of the country.

Conclusion: The Bureau, through strict adherence to laws, grades, label reviews and other essential data, has done much to upgrade the quality and condition of farm products offered for sale in Massachusetts. These programs reflect general crop conditions and market situations. The uniform laws and grades allow for products in interstate and export commerce. Working with other states, the USDA, the Food and Drug Administration and various regulated industries, the Bureau and the Department have helped foster the marketing of high-quality products.

BUREAU OF FARM PRODUCTS STATISTICS

Seed Inspection Program - samples officially tested,

	1983	1984	1985	1986	1987
Agriculture	48	61	73	47	54
Mixtures (Lawn)	47	33	80	68	73
Vegetables	409	361	537	551	421
Flowers	125	101	158	115	104
Sprouts	8	10	-	3	-
TOTAL	637	566	848	784	654

Fruit And Vegetable Inspection Revenue - fiscal year

	1983	1984	1985	1986	1987
Apples	$8,822.93	8,678.15	9,218.41	7,972.74	6,375.35
Cranberries	360.00	280.00	1,321.00	140.00	700.00
Onions	700.70	314.02	-	-	-
Potatoes	613.81	920.24	469.00	66.69	41.85
TOTAL	10,497.44	10,192.41	11,008.41	8,179.43	7,117.20

Feed Fertilizer And Lime Registration - calendar year

	1982	1983	1984	1985	1986
Feed/a	1,939	1,992	2,100	2,035	2,173
Fertilizer/b	691	810	1,000	980	926
Fertilizer/c	13	20	26	27	30
Lime	30	32	26	35	35

Feed, Fertilizer And Lime Revenue - calendar year

	1982	1983	1984	1985	1986
Feed/a	$48,475	$49,800	$52,500	$50,875	$54,325
Fertilizer/b	18,525	20,250	25,000	24,500	23,150
Fertilizer/c	1,625	2,500	3,250	3,375	3,750.00
Lime/d	750	800	650	875	875
Fertilizer/e	10,571.53	11,888.14	14,475.00	14,773.84	14,795.10
Fertilizer/f	3,858.78	7,101.30	7,842.50	8,656.67	7,073.20

TOTAL : $103,968.30

/a Brands /d Brands
/b Specialty brands /e Tonnage
/c Commercial plants /f Penalties

- Registrations and revenue are collected on a calendar year for feed and fertilizer.
- Revenue generated by inspection and registration fees totalled $111,085.50.

Bureau of Milk Marketing

John B. Kelley, Chief

The Boston fluid milk market serves a population of 8 million people. It encompasses Massachusetts, Southern New Hampshire, Rhode Island, and parts of Connecticut. The increase in the commercial disappearance of milk along with declining support prices continues to cause extreme tightness in the raw milk available in this market.

In early 1987 dairy producers throughout the Northeast joined in a Regional Cooperative Marketing Agency (RCMA). in July RCMA instituted a draft-order or premium pricing for Class I milk to all fluid milk processors for the months September through December 1987. This action was the first premium price announcement by RCMA in 12 years and represents an important step towards increasing the income of Northeast dairymen. Despite these changes, prices for packaged milk in the Boston market remain competitive with other regions of the country.

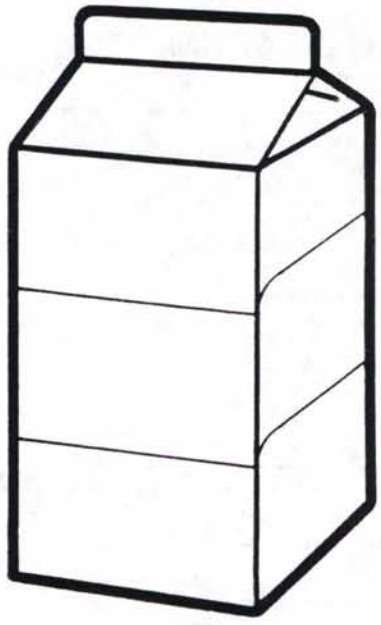
In other areas affecting milk marketing in Massachusetts during 1987, the Massachusetts Producer Security Trust Fund showed continued growth. Under Massachusetts General Law Chapter 10, Section 49, Chapters 20 and 21, C.M.R. 8.00, independent producers shipping to proprietary handlers pay five cents per hundredweight into the Fund. Receiving handlers make payment to the Department before the twenty-fifth day of the month for milk received during the previous two payment periods. All payments are cross-checked by the Bureau against audited receipts on a monthly basis. Proceeds are invested by the state Treasurer in the Municipal Depository Trust.

Proprietary handlers with Massachusetts producer payrolls are required to post bond or other security, regardless of whether the receiving handler is located in-state or out-of-state. The security posted must equal the value of payment for one payment period plus ten percent. There is no limit on this bond. The security must comply with provisions of Massachusetts General Law Chapter 94, Section 42, and is reviewed on an ongoing basis.

The Bureau continues its policy of licensing fluid milk handlers operating in Massachusetts, retail establishments selling milk in the Commonwealth, bulk tank drivers, and individuals testing milk for butterfat content. Educational seminars for bulk tank drivers were held in different parts of the state during the year.

Under Mass. General Laws Chapter 94, the butterfat inspector continued to cross-test and check both on-farm and in-plant verifying payment to producers.

An automatic data processing management system is used for all licensing, security fund, and bonding data input.



Pesticide Bureau

Jeffrey Carlson, Chief

This past year was a busy and productive one for the Pesticide Bureau, culminating with the finalization and implementation of a number of important projects.

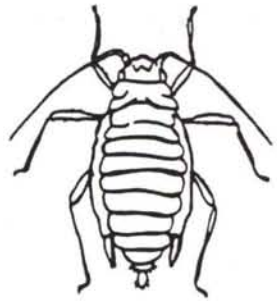
As a result of many months of hard work by the Bureau staff, the Department of Environmental Quality Engineering (DEQE), industry representatives, and the Pesticides Board, the Bureau is pleased to announce the promulgation of the Right-of-Way management regulations. This took effect June 87. This means that regulations are now incumbent on railroads, utilities and other organizations, to draw up Vegetation Management Plans to control vegetation on utility, railroad or highway right of way. Also included in this regulation, is a herbicide review process to assess the suitability of herbicides to be used in areas adjacent to wetlands. This was accomplished in cooperation with the Department of Environmental Quality Engineering. This regulatory process will be phased in over a three year period.

The Department has promulgated an amendment to 333 CRM 10.03 (32) concerning aerial application of pesticides. The amendment tightened aerial use restrictions and established a permit system for fixed wings applications. The Task Force appointed by the Commissioner on this issue in the fall of 1986, after many deliberations, public forums and data collection, issued its report early in February. Acting upon the report's recommendations, the Pesticide Board approved the following:

- The establishment and definition of Protected Areas to measure buffer zones.
- The establishment of buffer zones from defined Protected Areas, property line and surface drinking water supplies.
- Fields must be permitted by the Department in order to be applied by fixed wing aircraft.
- Notification signs before any aerial applications and also signs for every ground and air agricultural restricted use pesticide application.

The Commonwealth has pioneered in the implementation of a unique comprehensive lawn care regulation. Inherent in this regulation, is public awareness and communication effort to insure that lawn care pesticides are used in a manner that minimizes public exposure. Commercial applicators are now required to: a) provide consumer statement; b) offer consumers the option of prior notification, and c) post signs and information sheets to provide residents and the general public with information on application locations to avoid inadvertent exposure.

With assistance from the Cooperative Extension Service, the Department conducted a survey of Massachusetts farmers to investigate the extent of pesticides requiring disposal procedures. The survey also sought information on disposal practices. The subsequent report which was made available in November, 1987 highlights several concerns on this issue including; unclear and ambiguous laws and regulations, and an undetermined, but large amount of existing farm waste. To deal with these problems, the Department has proposed a two part program, intended first of all, to assist farmers in the proper disposal of existing and unusable pesticide waste, and secondly, to develop policies and regulations necessary to prevent the future occurrence of waste.



This year Massachusetts Pesticide Analysis Laboratory at U Mass, Amherst, which provides analytical support needed to enforce federal and state pesticide laws completed several additional projects. The laboratory carried out pesticide analyses work in conjuction with the Buzzards Bay project, which sought through funding by the EPA, to assess the pollution levels in the Bay. There was concern regarding pesticides washing into the Bay as a result of agriculture. The Pesticide Bureau was asked by the DEQE to coordinate the project and perform soil analysis from different spots on the cranberry bogs as well as downstream. The lab also completed a study comparing the drift of pesticides from aerial applications against sprinkler applications. Other projects included an environmental fate study on the use of alachlor, atrazine and metolachlor on corn fields; and the testing of both private and public drinking water supplies for pesticide contamination.

The Enforcement section of the Bureau reports success in the effort to curb unlawful pesticide applications. Among the several hundred cases investigated, sixty three complaints were investigated; of these forty-three were non commercial complaints. There were ten private investigations for lack of compliance in certification or license. Also, the number of inspections increased significantly (see figures below).

Other developments include increases in fines and penalties for violators that that are now in place as a result of amendments to Section 14 of the Commonwealth's statutes. The law has been amended so that fines, not in

excess of $25,000 and prison terms ranging from one year to two years or both can be handed out to violators. On top of the aforementioned changes, the law has been updated in three categories. The Department and the District Attorney's office can, upon evidence, institute criminal proceedings in addition to civil and administrative citations.

The Bureau's enforcement activities has been augmented by addition to its corps of inspectors. The total number of inspectors now stands at eight. This increase in support will be crucial, especially in the areas of record-keeping compliance, responding to consumer complaints and producer establishment inspections.

The new inspectors and their areas of responsibility are:
Deborah V. Karan - Essex and Northern Middlesex counties.
Wayne R. Tolland - Bristol, Norfolk, Suffolk, and southern Middlesex counties.
John E. Kenney - Plymouth, Bristol, Barnstable and the Islands.
Richard E. Thompson - Worcester County.

Enforcement Update FY 1987

Number of complaints investigated- - TOTAL 63

Agricultural:

Cranberries	5
Fruit trees	1
Corn	2
Potatoes	2

Commercial (Non-agricultural)

Trees/ Shrubs	2
Storage/Disposal	6
Lawn care	11
Residential pest control	15
Interior plantscape	1
Right- of- Way	1

Institutional pest control

Bats	1

Private (No certification or license)

Mosquito	2
Rodent control	1
Flea control	1
General pest control	3
Right of Way	1
Birds	1
Lawn care	1

Number of Inspections

Experimental use permit inspections	3
Producer establishment inspections	21
Market place inspections	30
Routine applicator inspections	51
Restricted dealer inspections	17

ENFORCEMENT ACTIONS:

Violations	Administrative order	Letter of warning
Misuse	5	3
Licensure	12	2
Cease & desist use	2	-
Records	4	17
Storage/Disposal	2	-
Use of non-registered pesticide	3	2
Use by uncertified applicator	1	1
Distribution non- registered pesticide	-	1
Proper use	4	5
Imposed restrictions	3	-

- Number of cases referred to Attorney General (civil) 6
- Adjudicatory hearing 1

Pesticide Board members

Governor Dukakis has appointed Dr. Lewis Pepper to the Pesticide Board at the expiration of Dr. John Ayres' term. Robert Gillette, the other public appointee to the Board also completed his term. The Department extends its thanks and appreciation for their services.

In FY 1986, the pesticide licensure staff continued to make progress in regard to the Bureau's commitment to improve the Commonwealth's licensure program in fiscal 87. Priority was focused on the establishment of an expeditious processing system, that would minimize administrative delays.

The assistance of the Executive Office of Environmental Affairs (EOEA) Data Center, has been extremely useful due to the installation of an automated system, which has resulted in more efficient processing procedure. This year, the Department administered and monitored twenty-eight licensure examinations throughout the Commmonwealth. The General pest control, Core, Termite, and the Wood Treatment exams, were revised and updated.

Also, ninety (90) applicator training sessions were approved by the Department. The sessions are an important part of the Department's quest to improve awareness about pesticides, their safe use, and education regarding changing standards and procedures. This program is carried out in conjunction with the Pesticide Coordinator at the University of Massachusetts, Amherst.

FY 1987: License/Certification

	# issued	New	Total
Commercial Certification	1802	426	2228
Private Certification	1469	225	1694
Applicator License	835	461	1296
Dealer License	107	19	126
Reciprocal Certification	139	107	246
TOTAL	**4352**	**1238**	**5590**

The figures above indicate the total number of licenses and certifications issued by the Commonwealth for pesticide application in FY 1987. It should be noted that the number of private certifications increased this year. This correlated to the reclassification of several pesticide active ingredients from general use to restricted use pesticides. Growers are now required to be certified in order to purchase or use the reclassified pesticides.

To keep abreast with adjustments and modifications in the insurance industry, the Pesticide Board, May 1986, approved regulation that enabled the Department to waive pollution liability coverage requirements in cases where it was not available. The waiver expired May 1987 with the August 1987 approval by the Board to delete the requirement of a consumer information sheet, and modification of the waiver process. Hence, under the new regulation,waivers will not be granted to individuals or companies, but only to a segment of the pest control industry. The Board approves the waiver requirement only when there is demonstrated evidence that the coverage is not being offered to that industry segment at any cost.

Registration Activities

Registration Staff reports the successful computerization of the re-registration process. The establishment of a reliable database, has facilitated quick problem-solving capabilities in the advent of increased number of pesticides being considered for registration.

This year the staff has the responsibility of processing data, and generating summaries of toxicological and environmental fate data to be used in registration decisions in the Commonwealth. The identification and retrieval of ingredient data is on-going. These files include Active Ingredient Data Sheet, EPA publications, and primary literature. The existing files number about 350, and when the data gathering process is complete, an additional 200 files should be forthcoming. Also in the works, is the expected completion of the ranking criteria project, which involves the development of scientific criteria for prioritizing pesticides active ingredients, necessary in regulatory activity.

State Individual Reviews

The Pesticide Board Subcommittee voted in January to institute state individual reviews for two pesticides; Alachlor and 2,4-D. The need for further information regarding possible exposure was cited as the underlying factor in the case of 2,4-D. For Alachlor, the Subcommittee was concerned about the ambiguity of data pertaining to herbicide's potential for groundwater contamination, as well as other adverse effects on humans and the environment.

Massachusetts regulations governing the registration, and use of experimental pesticides, have been reviewed by state officials and industry representatives. It is hoped that an amended draft of the Experimental use permit regulations will be completed and adopted next year.

The Bureau staff has completed work on the Groundwater Protection strategy, which will be brought before the Board in December for adoption. The strategy was drafted as result of detection of several pesticides in groundwater. The strategy will attempt to prevent further contamination by assessing the ability of pesticides to leach into geographical areas susceptible to contamination. Following these assessments, preventive measures

will be proposed to mitigate the contamination. Also, while several sections of the strategy, such as groundwater sampling in sensitive areas, have been implemented, action on other sections is still imminent.

Other projects slated for completion in the coming year include: assessment of golf course pesticides, and a subsequent report on safe materials to be used within a class of compounds i.e. herbicides and insecticides.

The Pesticide Root Zone Model (PRZM) will be operational following the compilation of weather data in the last 10 years of four sites in the state. This model will assist in the assessment of pesticides leaching potential.

Bureau of Plant Pest Control

Peter C. Kuzmiski, Chief

Nursery Inspections

The annual inspection of nurseries was completed on September 1, 1987. Five inspectors and a foreman inspector were employed for this work starting on July 1. Our inspection certificates expire on July 1 of each year. New nurseries are inspected subsequent to July 1 as they become known. The summer inspection crew consisted of temporary personnel usually recruited from the local colleges or schools, and applicants must have had courses in entomology or related subjects.

No unusual infestations of plant pests were found in the nurseries. The Gypsy Moth was scarce in the nurseries, as was the Japanese beetle. Controls apparently were keeping those pests at a minimum. The following list shows the incidence of insect pests found in descending order: aphids, mites, scales, gallmakers, defoliators, leafminers and borers. The most common diseases noted were leafspot fungi and mildews. Winter injury was at a minimum.

Nurseries inspected this year amounted to 310. There were 46 greenhouses inspected and certified.

Agent's licenses issued to individuals and establishments numbered 335. The chart below describes the fee system imposed upon the inspection of nurseries and greenhouses, and registration of agents:

Survey and Trapping

Surveys were conducted for presence of Golden Nematode, Red Steele Disease of Strawberry, and Gypsy Moth on lands surrounding nurseries. Trapping was done for presence of the European Chafer outside of the known infested area. GN, RS, and EC surveys were negative. The Gypsy Moth was found to be light to none on lands around the nurseries.

Two new certification programs were instituted this year. Namely, the growing of virus free strawberry plants and Cape American Beachgrass, (Ammophila brevilqulata Fern).

Collaboration with USDA--APHIS

Pest detection, Black Stem Rust, Postentry quarantine, insect, plant pathogen, soil and snail importations into this state were cooperative activities with APHIS. There were 41 sites this year that were growing plants from foreign countries under Postentry quarantine No. 37.

Five seasonal apiary inspectors were employed this year under direction of our Chief Apiary Inspector to inspect our honeybees. The inspection period usually starts around May 1 and ends October 31 each year. The honey crop was below normal this year. Colonies were averaging between 25 and 30 pounds, compared with 35 to 50 pounds average in a good year. Honey plants such as Black Locust, Blackberry, Raspberry, Sumac, Basswood, Clover, Purple Loosestrife and Goldenrod did not secrete enough nectar to ensure even an average crop. Samples of bees were taken and examined for presence of the Tracheal Mite in conjunction with APHIS. Tracheal Mites were found in several colonies owned by two of our migratory beekeepers. There were no mites found in colonies of our hobbyist beekeepers. No Varroa mite has yet been found in our apiaries. Over 500 samples of adult honeybees have been collected and examined for tracheal mite using a laboratory at the University of Massachusetts. Apiary inspectors have been trained and instructed to be on the lookout for Varroa mite and the Africanized honeybee.

Schedule of Inspection Fees

NURSERIES	
less than one acre in stock	$ 5.00
1 - 5 acres	$ 15.00
6 - 25 acres	$ 20.00
26 - 100 acres	$ 25.00
Over 100 acres	$ 35.00
Greenhouse (Not in nursery)	$ 20.00
Agents	$ 20.00

SPECIAL CERTIFICATION:	
State plant phytos issued	98
State Tree and Shrub seed certificates issued	361
Federal Plant phytos issued	71
Federal phytos for apple export	120
Ribes control--area permits	13, for 70 Ribes plants
Houseplant inspection certificates	85

Apiary Inspection

Five seasonal apiary inspectors hired by the Department of Food and Agriculture commenced apiary inspection on June 1, 1987. Honeybee colonies kept by hobbyist as well as migratory (commercial) beekeepers were inspected in all of the Commonwealth's counties except Suffolk, Dukes, and Nantucket; 8,264 colonies out of an estimated 9,984 resident hives and 6,585 out of 10,776 migratory colonies (originating from Florida, Georgia, and Louisiana) were inspected. Migratory colonies were rented in Worcester, Middlesex, Plymouth, Bristol, and Barnstable counties for apple and cranberry pollination service. American Foul Brood (AFB) infected 1.38% of the colonies inspected; one percent less than last year (1986). Of the 14,849 colonies inspected, drone brood from 2,600 hives was examined for Varroa mites; all results were negative. An additional 875 colonies were surveyed for Plymouth, Bristol, Middlesex, and Essex counties during October, November, December, and January of 1988 using the the ether and fluvalinate (acaricide) methods; again all results were negative. The tracheal mite, *Acarapis woodi*, survey which was initiated in 1985 continues as an ongoing program. Tracing the spread of this mite, which infests adult honeybee respiratory systems and causes extreme stress, has operations in eastern Massachusetts.

The 1987 honey crop was about average in production throughout the Commonwealth. Honey tended to be amber and dark amber in color with a slightly stronger flavor than in previous years. Most beekeepers were quite satisfied with the 1987 crop results.

The Varrao mite, *Varrao jacobsoni* Oudemans, originally a ectoparasite specific to the eastern honeybee, *Apis cerana*, confined to Far East Asia, is now one of the most destructive pests of the European honeybee, *Apis mellifera.* Reports of extensive colony losses due to varroatois in Europe, the Near East, and South America fill the apicultural literature. In the case of *Apis cerana,* the Varroa mite develops exclusively on the drone nymphs while they are in the sealed cell (the compartment making up the honey comb). In *Apis cerana* the reproductive female mites enter both worker and drone brood cells, but lays eggs only in drone cells. In *Apis mellifera*, the only honeybee commercially kept in the Western Hemisphere, female mites lay eggs in both drone and worker cells. The feeding activity of the adult and nymphal mites on larval and pupal honeybee lifestages results in adult honeybees that are smaller, often deformed, and have limited longevity. The mite pierces the integument (skin) with its mouth parts, and begins to feed by withdrawing the haemolymph from the larva or pupa; these feeding sites also serve as excellent entry points for bacterial infection, causing futher stress. Feeding wounds on adult honeybees also serve as possible bacterial infection sites. Varroa mite has never been eradicated in any country once it has become established. Selection of honeybee strains having shorter early life stage developmental periods, which interrupt the Varroa mite life cycle, may be the long term answer to the control of varroatosis.

Varroa mite was first detected in Wisconsin on September 27, 1987. Survey work in Florida, California, Pennsylvania, New York, North and South Dakota, Illinois, Ohio, Maine, and Nebraska has posted positive detection results. Positive detection does not necessarily mean that a state is solidly infested. Survey and suppression of varroa mites will take more time and funding than American Foul Brood inspection and control programs have cost in the past.

Recently the Environmental Protection Agency passed special Section 18 approval for emergency use of flu valinate-impregnated plastic strips as a control for Varroa mites on honeybees. This action is in accordance with specially amended Section 18 (40 CFR Part 166) of the Federal Insecticide, Fungicide, and Rodenticide Act. This recent development has encouraged beekeepers owning mite infested colonies in the previously mentioned states.

The Animal and Plant Health Inspection Service (APHIS), an agency of the USDA, has not yet decided on what its recommendation for federal involvement with a Varroa mite program will be. It is thought by several APHIS and Agricultural Research Service sources that a federal quarantine constructed around treatment rather than depopulation of infested colonies will be used for certification purposes. The bottom line for Varroa mite suppression will be acceptable pollination service and honey production in the future.

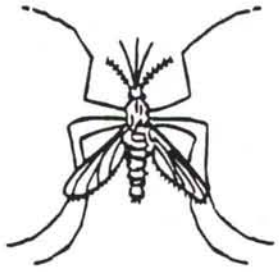
APIARY INSPECTION:

YEAR	# COLONIES INSP.	%AFB	%EFB
1985	13,201	2.42	0.45
1986	12,582	2.93	0.37

- Estimated number of colonies in Massachusetts: 20,000
- Known number of beekeepers in Massachusetts: 3,600

State Reclamation and Mosquito Control Board

Lewis F. Wells Jr., Chairman



The day-to-day work of the State Reclamation and Mosquito Control Board (SRMB) consists largely of the fiscal transactions necessary to support nine mosquito control projects, seven greenhead-fly control projects, three salt marsh ditch maintenance projects and four other accounts. The tasks of handling payroll, purchasing, bidding and billing for those projects went exceedingly well in 1987.

Management Improvements: In the past, it was not unusual for a bill incurred by a project to be paid as many as six months later. Nowadays, a delay of six weeks is rare. Much of the credit for the improvement goes the Office of the Comptroller, which has put into place the computer-based MMARS system of fiscal management.

Deserving an equal amount of credit are Margaret Havey, the board's executive secretary, and Constance Manna, her assistant. The finest system will fail unless those who operate it know what job has to be done by the system. Peggy and Connie know what needs to be done and how to work within the system to get it done.

On-Site Board Meetings: During fiscal year 1987, all but two of 13 board meetings were held at the regional headquarters of the several mosquito control projects. While most of these meetings involved routine appointments or reappointments, I and my fellow board members - Donna Bishop of the Department of Environmental Quality Engineering and Thomas Lynch of the Department of Environmental Managment - knew we would gain a greater insight of the issues through on-site visits.

In addition to holding meetings throughout the state, the Board has encouraged the superintendents of the projects and other interested parties to attend the meetings as well. That outreach effort proved successful, as attendance rose throughout 1987.

GEIR Report: The Board spent much time in 1987 on preparing a Generic Environmental Impact Report. While the bulk of the work had been completed by the end of the year, the board will address final details - technical, legal and administrative - in 1988. Because of the complexity of the issues and the different perspectives on the need for and environmental consequences of controlling mosquitoes, the debate should continue to prove interesting.

Cropwatch/87

From springtime flooding to June hailstorms, from summer drought to an early-autumn snowstorm in the Berkshires, the 1987 growing season was a temperamental and eventful one for Massachusetts farmers.

"We went from one extreme to another and back again," reports Assistant DFA Commissioner Charles Costa. "It was either too much precipitation or not enough. As a result, certain areas suffered some rather significant losses."

But in the end, said Costa, the state's farmers weathered the elements to have a modestly successful season overall. Costa and others expect cash receipts from farm marketings in 1987 will come close to the more than $425 million earned at farmgate in 1986.

At times this year, it didn't seem as though that would be possible:

- *A hard-driving rain in early April washed away prime acreage throughout the state, particularly in northern Franklin County. Few crops had yet been planted, but farmers along the state's major rivers and tributaries lost hundreds of acres of rich bottomland.*
- *A June 13 hailstorm in southern Hampden County destroyed apples and cut the value of this year's yield in that orchard region by more than 90%.*
- *Summer drought-like conditions forced farmers to irrigate heavily throughout the state. Hardest hit was the southeast, where some farmers reported greater than 50% losses. Concerns rose in cranberry regions that there would not be enough water for wet-harvesting. Rain finally came in the last few weeks of summer, but not soon enough for many crops.*
- *And just when it seemed the weather woes had passed, a freak blizzard blanketed the Berkshires in early October, damaging apple trees, flattening hundreds of acres of silage corn and causing other damage.*

Against such odds, however, Massachusetts growers were able to produce enough and sell enough to keep profits "in the black" overall, said Costa.

State Research Aimed at Improving Pesticide Management

The state's efforts to substantially reduce the use of pesticides on Massachusetts farms has made several advances with the recent awarding of $85,000 in grants for research into Integrated Pest Management (IPM) and biological controls.

Jeffrey L. Carlson, chief of the Department of Food and Agriculture's Pesticide Bureau, said the latest round of state-funded research - involving five separate projects - is part of an ongoing program to improve pest control in Massachusetts, while using fewer pesticides to do the job.

"We've come a long way in recent years in building a broad-based acceptance of IPM, biological controls and other pest management alternatives," said Carlson. "But we still need to do more, from a scientific viewpoint, to demonstrate that these approaches are technically and economically feasible. These research projects will help us do just that."

While the state's pesticide management strategy has many components, the most prevalent is Integrated Pest Management, a system which combines several pest-control techniques, both chemical and non-chemical, to keep pest populations below a certain economic threshold - the level at which they seriously threaten crops.

The $85,000 in grants for IPM and biological control research were awarded in the following categories:

- **BIOLOGICAL CONTROLS for APPLES.** University of Massachusetts researchers, with input from the apple industry, were given a $22,000 grant toward a three-year study on the feasibility of changing current orchard groundcover management in a way that favors the buildup of predatory mites, reduces apple scabbing, and promotes better tree growth and productivity.
- **BIOLOGICAL CONTROLS for GREENHOUSES.** The New Alchemy Institute of Falmouth has received a $20,000 grant to develop a comprehensive IPM program for greenhouses. With the expansion of plant production in greenhouses in Massachusetts, the state hopes to see an emphasis on biological controls in those enclosed settings.
- **BIOLOGICAL CONTROLS for CRANBERRIES.** IPM specialist David Simser of Insect Management Services of Falmouth (also associated with New Alchemy) received a $22,845 grant to conduct a study on alternatives to chemical pesticides in cranberry bogs.
- **BIOLOGICAL CONTROL of the COLORADO POTATO BEETLE.** UMass researchers, with input from the state's potato industry, received a $21,557 grant to examine possible biologocal agents (such as beneficial insects) to control the Colorado beetle.
- **ORGANIC POTATO PRODUCTION.** UMass researchers, along with the Small Farms Institute of Belchertown, received a $3,443 grant to develop dependable methods of growing potatoes organically, using such IPM techniques as disease-resistant cultivars and crop rotation.

Carlson said plans now are under way to begin another round of competitive bidding for additional research projects. Those interested can contact Carlson at the Dept. of Food & Agriculture, 100 Cambridge St., Boston, 02202. (617)727-7712.

New Agri-marketing Incentive Grants Awarded

Eager to open up new markets for a growing array of Massachusetts farm products, processed foods and speciality goods, the Massachusetts Department of Food and Agriculture has awarded more than $30,000 in incentive grants to several entrepreneurs statewide.

The grants, which come to Massachusetts through the U.S. Department of Agriculture's Federal-State Marketing Improvement Program (FSMIP), are being used to inspire innovations, establish joint agri-business ventures and otherwise bolster the state's farm economy

The grants were awarded as follows:

- **Massachusetts Farm Bureau Federation, Bedford.** *$8,000 to produce five new Farm Trails/Harvest Trails maps similar to those done this year for Berkshire, Essex and Worcester counties, also with FSMIP funds. (See story below.)*
- **Manny's Dairy Farm, Lancaster.** *$7,500 to proprietors Manuel and Maria Moreira to market soft Portugese cheese produced from their own dairy.*
- **Franklin County Community Development Corporation/Northern Tier Project, Greenfield.** *$4,000 to organize a collective marketing association for some 150 food-processing companies and related firms in the area.*
- **Massachusetts Natural Organic Food Association.** *$3,500 to develop organic certification standards for fruit production, similar to those already established for vegetables.*
- **Cape Cod Conservation District/ Cape Cod Farm Bureau/ Cape Cod Cooperative Extension/ USDA Soil Conservation Service.** *$3,000 to develop a "Green Industry Directory" of Cape Cod farms, greenhouses, nurseries, flower growers, etc..*
- **Touchstone Farms, Easthampton.** *$3,000 to proprietor George McNeil for marketing research on an organic vegetable drink using locally-grown produce.*
- **Taste of the Island, Vineyard Haven.** *$1,400 to proprietor Martha Lesher to expand the marketing of a sampler basket of Martha's Vineyard specialty products.*

'Farm Trails' maps combine agriculture, tourism

The Massachusetts Farm Bureau Federation has used a grant from the Department of Food and Agriculture to produce a new series of "Farm Trails/Harvest Trails" maps for Berkshire, Worcester and Essex counties.

Unveiled during the summer, the large, fold-out brochures are designed to help Massachusetts residents and visitors become more closely acquainted with the thousands of family farms operating in the Bay State.

The maps feature lists and descriptions of various farms in the three counties, as well as directions on how to reach them. Billed as "A Buyer's and Tourist's Guide to Scenic Farmland in Massachusetts," the maps have been distributed to visitor information booths, chambers of commerce and other tourist stops.

"Those farm families who have chosen to participate in Farm Trails/Harvest Trails invite the non-farming public to enjoy the fresh air and open space of their treasured farmland, visit and learn about farm animals, take part in the everyday joys of farming and the celebration of the harvest," writes Pam Comstock of the Farm Bureau in a narrative accompanying the maps.

The farms included in the maps represent the full gamut of Massachusetts agriculture - dairies, orchards, vegetable farms, livestock and poultry operations, horse farms, roadside stands, pick-your-owns, maple sugar houses and many other types of farm businesses.

The new maps bring to four the number of Massachusetts Farm Trails maps. The Martha's Vineyard Agricultural Society produced the first map - featuring farms on the island - during the summer of 1986.

Funding for all four maps was provided by the Department of Food and Agriculture under the Federal-State Marketing Improvement Program (FSMIP). Maps for other counties are in the planning stages.

For more information on the maps, call the Farm Bureau (617) 275-4374, or the Department of Food and Agriculture (617) 727-3018.

Farmers' Market Coupons Boost Sales, Feed People

More than 140 Massachusetts farmers and some 20,000 low-income households throughout the Commonwealth benefited from the expansion of the Massachusetts Farmers' Market Coupon program in 1987 to more than 15 markets statewide.

The program was launched by the Department of Food and Agriculture in 1986 in an effort to bolster sales at farmers' markets, while bringing fresh, nutritious fruits and vegetables to inner-city residents.

The way it works is that target groups of low-income residents receive $10 worth of coupons redeemable at specified farmers' markets in their area. Participating farmers turn in the coupons with the market master at the end of the selling day.

All totalled, more than $110,000 in private and public funds were earmarked for the coupon program in 1987 - at least six times the amount raised for the 1986 pilot project.

Farmers involved are reporting increased sales of as much as 30 percent as a result of the coupons. Many of the coupon customers are returning to the markets, even after their coupons are gone..

"What we're seeing is the emergence of a whole new group of customers for these inner-city farmers' markets," said Commissioner Gus Schumacher. "Mothers, children and elders are coming to these markets every week to buy quality products from the farmers who grow their food."

The success of the coupon program in Massachusetts inspired similar programs last year in Iowa, Connecticut and Vermont. Sen. John Kerry and Rep. Chester Atkins of Massachusetts have introduced legislation which would establish a series of demonstration projects nationwide, based on the Massachusetts model.

Most of the coupons under the program are distributed to households which already qualify for assistance through the Supplemental Program for Women, Infants and Children (WIC), a federal program administered in Massachusetts by the state Department of Public Health. In three communities, the coupons are given to senior citizens through local elder-assistance agencies. Catholic Charities and the Boston City Hospital's Healthy Start program also are involved.

In addition to the farmers' markets involved in the 1986 pilot program - Quincy, Roslindale, Worcester and Holyoke - the project in 1987 was brought to markets in Cambridge, Somerville, Brockton, Brighton, Lowell, Lawrence, Springfield, Northampton, Pittsfield and Great Barrington.

The coupon program is administered by the Massachusetts Federation of Farmers' Markets, with special assistance from the Expanded Food and Nutrition Education Program of the UMass Cooperative Extension.

Of the more than $110,000 budgeted for the program in 1987, $68,000 was provided by the Legislature, $30,000 was donated by a private Oregon foundation which also contributed funds last year, and another $20,000 came from other foundations.

Radio promo 'doughnuts'

With the holiday feast season approaching, the time is ripe for Massachusetts farmers, roadside stand operators, supermarkets, and other purveyors of farm-fresh local food to take advantage of the new radio jingle and promotional campaign launched this year by the DFA's Bureau of Markets.

Several versions of the catchy "Time is Ripe" melody - each promoting different commodities - have been sent to more than 50 key radio stations throughout the Commonwealth. The 30-second and 60-second tapes have blank portions or 'doughnuts' which can be filled with promotions for local farmers, farmstands or markets.

In many cases, growers record the inserts themselves, inviting listeners to come on down to the farm for a taste of the Commonwealth's best.

Produced for the DFA by a Boston-based advertising firm, the "Time is Ripe" promotional tapes can provide growers and markets with a very professional-sounding radio advertisement at a relatively low price.

"All the grower or market has to do is fill in the blank and buy the air time," says Bureau of Markets Chief Guy Paris. "The Department has paid the original production cost."

Aside from the radio spots, the Bureau of Markets is spreading the "Time is Ripe" theme - through colorful posters of fresh, Massachusetts-grown fruits and vegetables to roadside stands and supermarkets statewide. The posters follow the entire growing season, from early squash to Christmas trees.

Paris welcomes anyone interested in the "Time is Ripe" radio spots or posters to call Janet Christiansen for further details at (617) 727-3018.

State takes steps to bolster dairy industry

Refusing to let hundreds of hard-working, productive dairy farmers be put out to pasture, Massachusetts officials are taking steps to stabilize an industry which they believe is being pressured downward by "untargeted" federal policies.

"It's not an easy thing to do, but we are not going to roll over and let our dairy farms go away," said state Food and Agriculture Commissioner Gus Schumacher in a recent Associated Press interview published in newspapers nationwide. "Dairying is one of the industries most dominated by federal governmental policy, and that policy has - by and large - been contrary to Massachusetts interests."

Massachusetts, said Schumacher, is interested in preserving its dairy farms - not putting them out of business as the federal government has chosen to do with its surplus reduction program, the so-called Whole-Herd Buyout. Massachusetts alone lost 66 dairy farms under that program, which was a major component of the 1985 Farm Bill. Some 545 dairy farms remain in Massachusetts, about half the number there were only a decade ago.

Schumacher and others argue that while the buyout may have been an effective way to balance the economies of scale in the surplus dairy states of the West and Midwest, it has had a numbing effect on smaller dairy states, such as Massachusetts, which already produce far less milk than they consume.

"A targeted, regional approach to dairy policy makes much more sense than the broad-brush approach of the Whole-Herd Buyout and price-support cuts," said Schumacher. "While Massachusetts obviously will never be a California or a Wisconsin, there's no reason why we should sacrifice the dairies we do have to untargeted federal policies."

Determined to sustain an industry which contributes more than $100 million to the state's economy, provides more than 1,800 jobs and keeps upwards of 200,000 acres of farmland in active production, the Department of Food and Agriculture has developed a comprehensive program to keep the milk flowing in Massachusetts.

One of the main engines of that state-driven policy is farmland preservation. Some 45 percent of the nearly 20,000 acres of farmland spared from development under the state's Agricultural Preservation Restriction program to date have been dairy farms.

"It has been said that cows don't give milk - land gives milk, and that's very true," said Schumacher. "If we don't save the farmland which feeds our livestock, we risk not only the dairy industry, but the environmental quality of life of this state."

Schumacher noted that while the loss of farm acreage in larger dairy states may not be as noticeable, the impact is "magnified disproportionately" in a state the size of Massachusetts.

Another key aspect of the Commonwealth's dairy policy, said Schumacher, is the effort to improve farm management. The state's Cooperative Extension agency, based at the University of Massachusetts in Amherst, is expanding its outreach to keep dairy farmers abreast of the most efficient techniques of animal handling, milk production and storage, grain and hay management and other mechanical aspects of farmwork.

While primarily concerned with strengthening the base of traditional, mainstream dairy farming, the Massachusetts agriculture department is encouraging some farmers to consider diversifying dairy operations. Many farms have started producing farmstead cheese, ice cream, compost fertilizer and other on-farm dairy products in an effort to broaden their profit potential.

"We're certainly not saying that every dairy farmer should or could start moving in that direction," said Schumacher. "But we do know that some dairy farmers are carving out some valuable niches for themselves through direct marketing."

The department also is guiding farmers toward private and public finance agencies which are willing to invest in dairy-related ventures.

Massachusetts Agricultural Statistical Highlights

Compiled by

Thomas Gallagher, State Agricultural Statistician
Massachusetts Department of Food and Agriculture

Cranberries

TOTAL

- **acreage:** **11,709 acres harvested** (1)
- **production:** **1,800,000 barrels** (2)
- **value:** **$98,640,000** (2)
- **market:** **The fruit is marketed to seven handlers in Massachusetts**

Massachusetts produces approximately 48 percent of the U.S. crop. Cranberry production occurs in 45 communities in seven counties in eastern Massachusetts. Productive acreage under market order exceeds 11,700 acres. Eighty percent of the total acreage is highly concentrated in a cluster of Plymouth county communities. Sixty-one percent of the Commonwealth's 458 growers manage 11 acres of bog or less.

Counties with Harvested Acres in Cranberry Fruit

COUNTY	COMMUNITIES	ACRES	PERCENTAGE OF ALL ACRES	
Middlesex	1	25.0	<1%	
Worcester	1	7.0	<1%	
Norfolk	3	54.7	<1%	
Bristol	8	563.7	4.8%	
Nantucket	1	252.0	2.2%	
Barnstable	11	1,190.0	10.2%	
Plymouth	20	9,617.1	82.0%	
	45	**11,709.5** (1)	**100%**	**458 growers**

Plymouth County:
The Nucleus of Cranberry Fruit Production

COMMUNITY	ACRES	PERCENTAGE of ALL ACRES
Carver	2,870.3	24%
Wareham	1517.0	13%
Plymouth	1045.9	9%
Rochester	955.9	8%
Middleborough	954.4	8%
5	**7343.5**	**62%**

Five Year Data

YEAR	ACRES
1983	11,200
1984	11,200
1985	11,455
1986	11,644
1987	11,700

(1) Additional acreage exists which is not bearing fruit or under market order.

(2) New England Agricultural Statistics, 1986 crop year.

Source: Agricultural Stablization and Conservation Service, New England Agricultural Statistics, Department of Food and Agriculture and Cranberry Marketing Committee.

Christmas Trees

TOTAL:

- **acreage:** **5950 acres, estimated**
- **predominant species:** **spruces and firs**
- **production:** **50,000 trees harvested in 1987 with production expected to more than double by 1992.**
- **value:** **$1,300,000 estimated in 1987**
- **market outlet:** **95% of the trees are direct marketed at roadside.**

Distribution of Christmas Tree Farms

COUNTY	COMMUNITIES	GROWERS	ACRES
Western Massachusetts			
Berkshire	11	32	389
Franklin	15	44	524
Hampshire	12	54	642
Hampden	18	72	862
	56	**202**	**2417**
Central Massachusetts			
Worcester	47	124	1489
	47	**124**	**1489**
Eastern Massachusetts			
Essex	17	54	642
Middlesex	22	56	676
Norfolk	7	11	135
Plymouth	14	27	321
Bristol	11	20	236
	71	**168**	**2010**
Cape Cod and the Islands			
Barnstable	4 (estimated)	6	34
Dukes	n/a	n/a	n/a
Nantucket	n/a	n/a	n/a
	4	**6**	**34**
TOTAL	**178**	**500**	**5950**

Sources: Massachusetts Christmas Tree Association, Cooperative Extension, Department of Environmental Management and Department of Food and Agriculture.

Greenhouse

TOTAL:

- **producers:** 650 (estimated)
- **growing area:** over 10,000,000 square feet under cover and in excess of 100 acres in open ground.
- **major crop categories:** cut flowers, potted flowering plants, foliage plants and bedding plants.
- **marketing outlets:** retail florists, garden centers, farm stands, chain stores.

Massachusetts Greenhouse Industry by County, 1986

county	greenhouse establishments	communities w/ greenhouses	square feet under glass and plastic
WESTERN MASSACHUSETTS			
Berkshire	23	9	164,700
Franklin	19	8	82,500
Hampshire	27	7	817,200
Hampden	56	15	932,085
	125	**39**	**1,996,485**
EASTERN MASSACHUSETTS			
Essex	69	24	660,720
Middlesex	120	49	4,127,200
Norfolk	79	25	975,920
Worcester	93	38	4,000
Bristol	70	16	774,931
Plymouth	66	20	855,540
Barnstable	12	6	149,800
Dukes	5	2	30,000
Nantucket	3	1	50,000
	525	**181**	**8,590,644**
TOTAL	**650**	**220**	**10,587,129**

Hay (1)

TOTAL:

- **acres:** **127,000**
- **producers:** **2400 (estimated)**
- **production:** **325,000 tons**
- **value of production:** **$5,512,000**

COUNTY	ACRES
WESTERN MASSACHUSETTS	
Berkshire	19,812
Franklin	16,002
Hampshire	15,621
Hampden	6,858
	58,293
CENTRAL MASSACHUSETTS	
Worcester	32,500
	32,500
EASTERN MASSACHUSETTS	
Essex	8,636
Middlesex	9,906
Suffolk	---
Norfolk	2,607
Plymouth	5,334
Bristol	8,001
	34,544
Cape Cod and the Islands	
Barnstable	445
Dukes	711
Nantucket	230
	1,386
TOTAL	**126,735**

(1) all types

Source: Department of Food and Agriculture and New England Agricultural Statistics, 1986.

Maple

TOTAL

- **production:** **28,000 gallons** (1)
- **value:** **$890,000** (1)
- **producers and processors:** **200**
- **market outlet:** **primarily retail sales**

Distribution of the Maple Industry

COUNTY	PERCENT of PRODUCERS and PROCESSORS
Berkshire	9.5
Franklin	43.5
Hampshire	27.5
Hampden	7.5
Worcester	8.0
Middlesex	3.5
Bristol	0.5

FACTS:

- Maple production is highly concentrated in areas within Franklin and Hampshire counties. Located within are 71% of the state's 200 producers and processors.
- The maple grove where trees are tapped and sap collected is measured not by the number of trees but the number of taps. The number of taps is approximately 7,000 in an average year.
- Syrup production potential is 70,000 gallons. Due to poor weather conditions, syrup produced in 1987 was estimated to be 28,000 gallons.
- Maple producers received a higher average retail price of $31.80 per gallon in 1987, a 36 percent increase over the previous year when the price was $25.00 per gallon.
- Fifty percent of production is sold during sugaring season. The balance of the crop is sold between Thanksgiving and Christmas.

TRENDS:

- Because of higher syrup prices, producers are installing more taps. Syrup production potential has increased from 50,000 to 70,000 gallons in the past five years.
- In addition to higher gallon prices for syrup, more sales are shifting into the retail category. Many producers are increasing sales through mail order.

(1) Estimated by New England Agricultural Statistics, 1987 crop year.

Sources: Massachusetts Maple Producers Association, New England Agricultural Statistics and Massachusetts Department of Food and Agriculture.

Maple Sales, 1987

Although syrup is marketed throughout the year, sales peak during boiling season from late February to Early April and during the Christmas season from late November through December.

Nursery Stock

TOTAL

- **value:** **$19,600,000**
- **farms:** **266**
- **acreage:** **2664**

Distribution of Massachusetts Nursery Stock Production (1)

COUNTY	PRODUCERS	ACRES (in nursery stock)
Western Massachusetts		
Berkshire	17	86
Franklin	9	169
Hampshire	20	97
Hampden	25	343.5
total	**71**	**695.5**
Central Massachusetts		
Worcester	32	345
total	**32**	**345**
Eastern Massachusetts		
Essex	13	274
Middlesex	32	741.5
Norfolk	35	157
Suffolk	1	6
Bristol	36	224
Plymouth	25	116.5
total	**142**	**1519**
Cape Cod and the Islands		
Barnstable	17	101.5
Dukes	3	2
Nantucket	1	1
total	**21**	**104.5**
TOTAL	**266**	**2664**

(1) Does not include small fruit nursery stock.

Data source: Massachusetts Department of Food and Agriculture, Bureau of Plant Pest Control

Small Fruit

TOTAL

- **acreage:** **1514**
- **growers:** **180**
- **value of production:** **$2,750,000** (1)
- **market:** an estimated 70 percent of the small fruit crop is marketed through retail outlets such as pick-your-own establishments, roadside stands and farmers' markets. The remaining 30 percent passes through wholesale outlets and grower cooperatives.
- **major crop categories:** blueberries, strawberries, and raspberries

Distribution of Small Fruit Production

COUNTY	COMMUNITIES	GROWERS	BLUE/STRAW/RASP	TOTAL ACRES
Western Massachusetts			*acres*	
Berkshire	6	6	26/7/11	44
Franklin	12	18	319/108/53	480
Hampshire	12	18	44/61/31	136
Hampden	9	17	235/55/12	302
Total	**39**	**59**	**624/231/107**	**962**
Central Massachusetts				
Worcester	20	32	86.5/69.5/19.5	175.5
Total	**20**	**32**	**86.5/69.5/19.5**	**175.5**
Eastern Massachusetts				
Essex	12	16	9/59.5/31	99.5
Middlesex	13	19	8.5/27.5/12	48
Norfolk	4	7	16/8/1	25
Plymouth	14	26	91/19.5/2	112.5
Bristol	5	10	21.5/35/0.5	57
Total	**48**	**78**	**146/149.5/46.5**	**342**
Cape Cod and the Islands				
Barnstable	4	8	1/20/0	21
Dukes	3	3	2.5/6/5	13.5
Nantucket	n/a	n/a		n/a
Total	**7**	**11**	**26/26/5**	**34.5**
TOTAL	**114**	**180**	**882.5/476/178**	**1514**

(1) New England Agricultural Statistics has identified $2,750,000 of production; however, in view of the acreage identified with the assistance of Cooperative Extension Service, the value may be greater than indicated here.

Source: Cooperative Extension Service and Department of Food and Agriculture, 1987

Sprouts

TOTAL:

- **value:** **$2,559,000**
- **marketing outlet:** **virtually all is wholesaled to supermarkets and restaurants.**

Massachusetts Sprout Production (estimated)

Producers	Production (lbs.per year)	Wholesale Cost (per lb.)	Value
8 bean	6,700,000	$ .27	$1,809,000
8 alfalfa	750,000	$1.00	$750,000

Sources: Department of Food and Agriculture and Massachusetts Cooperative Extension Service

Tobacco

TOTAL

- **acreage:** 735 (1)
- **value:** $7,062,000 (1)
- **farms:** 21
- **production:** 622,000 pounds
  shade tobacco - 372,000 lbs. Havana Seed - 250,000lbs.

Distribution of Connecticut Valley Tobacco Production

COUNTY	COMMUNITY	ACRES	GROWERS
Franklin	2	93	4
Hampshire	3	152	12
Hampden	3	490	5
Total	**8**	**735**	**21**

(1) In consideration of the acreage identified from various sources, the value of production may be greater than is indicated for the 1986 crop year.

Sources: Department of Food and Agriculture, New England Agricultural Statistics

Tree Fruit

TOTAL:

- **value:** **$20,013,000** (1)
- **producers:** **209 (approximately)**
- **acreage:** **8844**
- **marketing outlets:** virtually all of the fruit is produced for fresh market. An estimated 70 % of the crop is wholesale marketed. The residual is sold through roadside stands, pick-your-own operations and farmers' markets.

Key Growing Areas:

Nashoba Valley - Over 50% of the state's tree fruit acreage is in Worcester Co. and on the Middlesex Co. boundary.
Franklin County - especially in the vicinity of Shelburne.
Hampshire County - east and west of the Connecticut River valley and especially Belchertown.
Hampden County - east and west of the Connecticut River valley and especially Granville.

Distribution of Massachusetts Tree Fruit Production

COUNTY	COMMUNITIES	GROWERS	ACRES
Western Massachusetts			
Berkshire	*6*	*7*	*254*
Franklin	*10*	*16*	*810*
Hampshire	*10*	*14*	*956*
Hampden	*12*	*23*	*962*
	38	**60**	**2982**
Central Massachusetts			
Worcester	*30*	*71*	*3547*
	30	**71**	**3547**
Eastern Massachusetts			
Essex	*10*	*11*	*439*
Middlesex	*18*	*37*	*1321*
Norfolk	*5*	*10*	*197*
Plymouth	*5*	*7*	*73*
Bristol	*7*	*12*	*280*
	45	**77**	**2310**
Cape Cod and the Islands			
Barnstable *Dukes* *Nantucket*	*1*	*1*	*5*
	1	**1**	**5**
TOTAL	**114**	**209**	**8844**

(1) New England Agricultural Statistics, 1986 (includes apples and peaches)

Vegetables

TOTAL:

- **acreage:** **21,000 acres under cultivation**
- **producers:** **over 850 growers in nearly 200 communities**
- **value:** **$35,683,000** (1)
- **marketing outlets:** Although a portion of vegetable production, mainly potatoes and cucumbers, reaches the process market, the largest portion is sold to the fresh market. Fresh market outlets include roadside stands, farmers' markets, grower cooperatives, restaurants, supermarkets and wholesale brokers.

Vegetable farms in Massachusetts are characteristically small and produce a wide variety of vegetables. Forty-six percent of the growers till less than ten acres, and only 22 percent farm over 35 acres. Due to ideal soil, terrain and marketing conditions, vegetable cultivation is quite prevalent in four areas.

Key Vegetable Growing Areas

Connecticut Valley - (Franklin and Hampshire counties) over 5000 acres are cultivated in bottom land of the valley. The communities of Hadley, Hatfield, Whately and Deerfield delineate the core of this producing area. Major crops are potatoes, sweet corn, cucumbers, squashes, cabbage and onions. A portion of the potato and cucumber crop is produced for the process market.

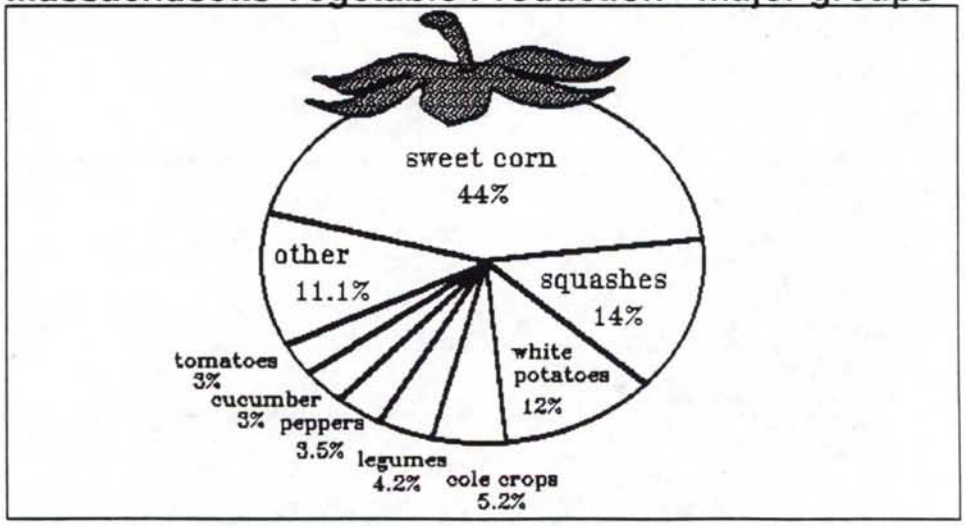
The Lower Connecticut Valley - (Hampden County) communities surrounding metropolitan Springfield cultivate nearly 2000 acres. A large portion of the acreage lies in Agawam, Southwick and Westfield.

Southeastern Massachusetts - primarily Bristol and parts of Plymouth counties. Between the metropolitan regional markets of Boston and Providence, Rhode Island over 4500 acres are cultivated in vegetables for the fresh market. Production clusters in communities near Dighton and Taunton. Major crops are sweet corn, butternut squash, pumpkins, beans, peppers and tomatoes.

Northeastern Massachusetts - (Essex, Middlesex, and eastern Worcester counties) over 3500 acres are cultivated. Vegetable cultivation in this area is more randomly scattered and less pronounced than in other key areas, although Methuen, Concord, and Northborough are important growing sites. Growers emphasize sweet corn, pumpkins and salad crops and market primarily through roadside stands.

(1) New England Agricultural Statistics,1986

Massachusetts Vegetable Production - major groups



Vineyards

TOTAL:

- **value:** **unknown (1)**
- **vineyards:** **36**
- **planted acres:** **288, vineyard size ranges from 1/4 acre to over 60 acres.**
- **planting:** significant plantings of vinifera varieties exist,however, French hybrids (crossing of vinifera varieties with American species) form the backbone of Massachusetts vineyards.
- **market outlets:** Most of the current production goes to local wineries. Small amounts of grapes are sold to home winemakers and the fresh fruit market.

Key Growing Areas:

Vineyards are currently found in 11 counties, however, over 75 percent of the planted acres are in Bristol, Plymouth, Barnstable,Dukes and Nantucket counties. There are also some smaller vineyards in Western Massachusetts where there is considerable experimentation with hybrid plantings..

COUNTY	COMMUNITIES	GROWERS	ACRES
Barnstable	1	1	9
Berkshire	1	1	4.5
Bristol	3	7	121.25
Dukes	2	2	31
Hampden	1	1	1.5
Hampshire	6	8	7.0
Middlesex	1	1	4
Nantucket	1	1	7
Norfolk	1	1	2
Plymouth	9	12	93
Worcester	2	2	5
TOTAL	**28**	**36**	**288.75**

(1) This commodity group is not surveyed by New England Agricultural Statistics.

Sources: Department of Food and Agriculture, Massachusetts Cooperative Extention, Massachusetts vineyard owners and the New England Wine Council

Apiaries

TOTAL:

- **number of colonies:** **21,013**
  (during peak pollination and honey season)
- **colonies primarily in honey production:** **9,172**
- **colonies used for pollination of apple and cranberry crops:** **11,841**
- **pounds of honey produced per hive:** **25**
  (estimated)

Of the 11,841 colonies used primarily for pollination of the apple and cranberry crops, most colonies are managed by migratory beekeepers who transport their hives to southern states such as South Carolina and Florida to permit the honey bees to rejuvinate and rebuild in a warmer climate.

Distribution of Massachusetts Apiaries

COUNTY	COMMUNITIES	BEEKEEPERS	COLONIES
Western Massachusetts			
Berkshire	29	177	411
Franklin	24	242	608
Hampshire	20	181	659
Hampden	18	197	846
	91	**797**	**2524**
Central Massachusetts			
Worcester	60	744	1993
	60	**744**	**1993**
Eastern Massachusetts			
Essex	33	356	1442
Middlesex	52	484	3405
Norfolk	27	344	1435
Suffolk	3	15	45
Plymouth	27	370	4462
Bristol	20	266	5023
	162	**1835**	**15,812**
Cape Cod and the Islands			
Barnstable	14	120	250
Dukes	5	27	178
Nantucket	1	2	256
	20	**149**	**684**
TOTAL	**333**	**3525**	**21,013**

Source: Department of Food and Agriculture, 1987

Dairy

TOTAL

- **dairy population:** **42,000 cows** (1)
- **production of fluid milk:** **561,000,000 pounds** (2)
- **value of dairy products sold:** **$76,295,000** (2) retail: $4,605,000 wholesale: $71,690,000
- **value of cattle and calves sold** **$12,746,000** (2)
- **market:** most dairy farms sell their fluid milk to one of 16 dairy manufacuring plants located in the state which process and market a full range of dairy products. Approximately 17 dairy farms, however, operate farm-based processing facilities and market their own product line.

Current Status

- 545 herds; 42,447 milking cows
- Median herd size, approximately 62 cows milking
- 1,537,000 pounds milk sold daily
- The predominant breed (90 percent of all herds) is Holstein.
- Massachusetts is a net importer of dairy products and supplies 9 percent of total consumption.

Production

- Average annual per cow milk production for all 545 herds is 13,047 pounds and trending up because of more sophisticated management and selective breeding practices.(1)
- The Dairy Herd Improvement Association advises 247 herds on management and breeding practices. For this group annual per cow production is 16,192 pounds.

Distribution of the Dairy Industry (1)

- Dairy farms are found in 169 of 351 Massachusetts communities.
- 75 percent of our milk production comes from five counties in central and western Massachusetts.
- The area of Worcester, Franklin and Hampshire counties is our largest dairy region. Dairy farms here generate 55 percent of the state's milk production.
- In Bristol County in southeastern Massachusetts, dairy farming is still prevalent in the oceanside communities of Dartmouth and Westport. Westport is the leading dairy community in the Commonwealth with 17 farms tending 2,008 milking cows yielding 5.8 percent of the state's total milk production.

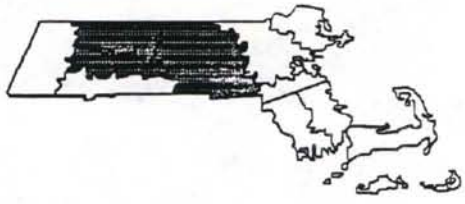
Dairy Farms Protected by Agricultural Preservation Restriction

- 61 1/2 dairy farms are participating in the APR program, representing an investment of $14,771,950 in land development rights since the inception of the program in 1980.
- 42 dairy farms are located in prime dairy regions.
  (1) Department of Food and Agriculture, 1987
  (2) New England Agricultural Statistics, 1986

Massachusetts' Most Prominent Dairy Region (1)

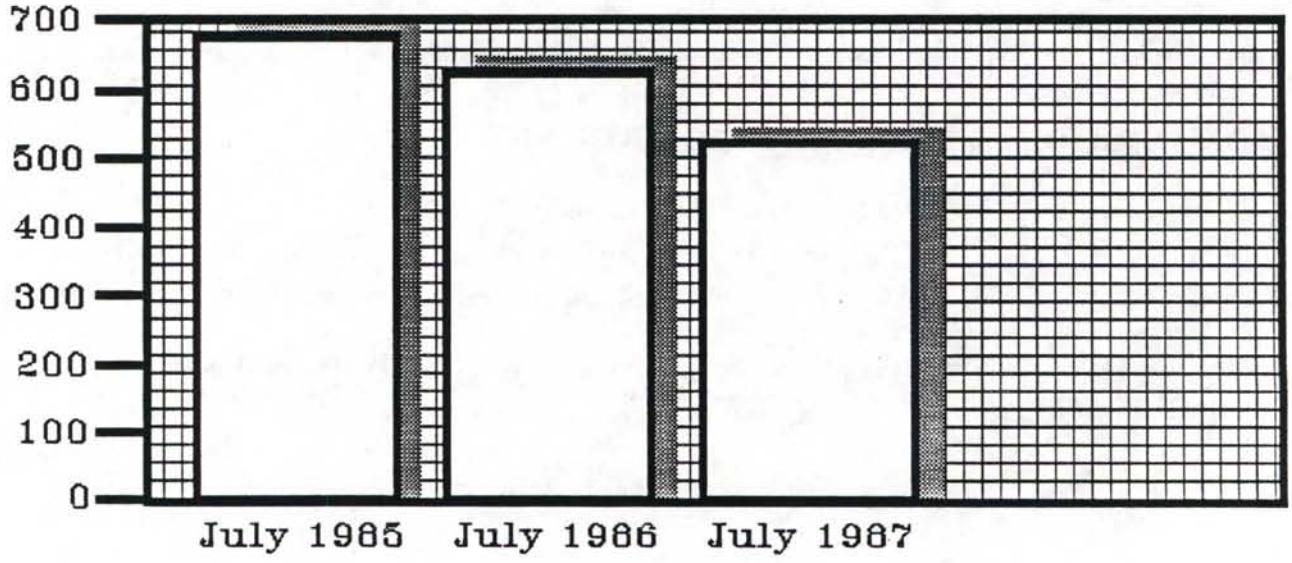
Communities	Farms	Cows	% of Total Milk Production
Worcester County			
44	140	10,468	25%
Franklin County			
19	99	7,577	17%
Hampshire County			
18	69	5,441	12%
81	**308**	**23,486**	**54%**

- 56% of all dairy farms.
- 55% of all milking cows.
- 55% of all milk production



(1) as of July 1987

Shrinkage of Dairy Farms



DAIRY FARMING in MASSACHUSETTS:

A Decade of Change, 1977-1987 (1)

	1977	1987	Percent Change
dairy farms	927	542	-42
herd size	59,600	42,400	-29
production (pounds milk sold daily)	1,722,000	1,537,000	-11

(1) The comparison interval is from July 1977 to July 1987.

Poultry

TOTAL

- **industry:** **Three segments:**
  1. market brown egg production
  2. poultry breeding
  3. fresh turkey production
- **production:** 21 million dozen brown eggs and 164,000 turkeys for local consumption. Poultry breeders produce baby chicks for brown egg production and market to domestic and foreign egg producers.
- **value:** **$30,471,000** (1)
- **typical farm:** The average poultry farm is family owned and operated and manages 20 to 30 thousand birds.
- **market:** Massachusetts' one million egg layers supply 17 percent of our 5.8 million consumers. Ninety-five percent of egg production is marketed to jobbers and wholesalers. Approximately 5 percent is retailed directly to consumers. However, the percentage of production of fresh turkey retailed directly from farmer to consumer is about 80 percent with the balance marketed to wholesalers.

Massachusetts poultry capacity is 1,430,000 birds on 60 farms as of December 1987. Total capacity consists of:

• Laying hens	1,113,000	34 farms
• Breeders	104,000	8 farms
• Turkeys	164,000	16 farms
• Game birds and ducks	48,000	5 farms

Distribution of the Poultry Industry

REGION	FARMS	BIRD POPULATION
Western and Central Massachusetts	32	1,127,000
Eastern Massachusetts (including Cape Cod and the Islands)	31	302,600
TOTAL	**63**	**1,429,600**

(1) New England Agricultural Statistics, 1986 crop year.

Sources: Cooperative Extension of Massachusetts and Department of Food and Agriculture.

Direct Marketing

In the broad view of American agriculture, the output of Massachusetts is a minor part of the the national whole. Massachusetts agriculture, however, is significant because it has one of the best markets in the country: a high percentage of high income consumers. Commercial farms, therefore, usually specialize in crops of high value such as market vegetables, fruits, nursery materials and more for direct consumption. Many farmers are ingenious individuals who study market possibilities and develop a specialty to satisfy a particular need. For example, there are gardeners who raise an assortment of exotic vegetables exclusively for chinese restaurants and food shops. There are those who produce sod for landscape contractors, flowers for wholesale florists, and game birds for gourmet restaurants and delicatessens. Farmers may have their own sales stand or direct contact with wholesale or other retail outlets. The direct market is for many Massachusetts farmers a particular advantage.

The pages that follow present the state-wide distribution pattern of two direct marketing outlets: roadside stands and farmers' markets. Although not apparent from the table, the propensity for roadside stands is greatest near fruit and vegetable growing areas in close proximity to consumers in urban areas. Farmers' markets, however, are generally located in population centers.

Farmers' Markets

County/location	Mkts. /week	Weeks of Mktg	Farmers
BERKSHIRE			
Great Barrington	1	24	10
North Adams	1	12	12
Pittsfield (Allendale)	2	52	26
Williamstown	1	17	10
FRANKLIN			
Greenfield	1	26	29
HAMPSHIRE			
Amherst	1	27	23
Belchertown	1	16	5
Easthampton	1	31	3
Huntington	1	20	6
Northampton	1	27	12
HAMPDEN			
Holyoke	1	25	24
Springfield			
(Avocado Street)	1	16	11
(Civic Center)	1	27	8
Westfield	1	24	12

Western Massachusetts Summary:

- 14 farmers' markets
- 15 markets per week in the prime harvest period
- 344 markets for the entire season

ESSEX			
Beverly	1	14	4
Haverhill	1	18	7
Newburyport	1	12	7
Topsfield	1	13	30
Wenham	1	17	4
West Newbury	1	10	9
Lawrence	1	18	11
MIDDLESEX			
Cambridge	1	17	10
Framingham	1	17	1
Lowell	1	23	9
Newton	1	17	15
Somerville	1	19	10
Sudbury	1	18	3
WORCESTER			
Auburn	1	15	25
Barre	1	15	15
Fitchburg			
(Valley West Plaza)	1	16	9
(In-Town Garage)	1	16	9
Gardner	1	16	7
Holden	1	18	6
Shrewsbury	1	12	4
Southbridge	2	18	8
Worcester			
(Center Courtyard)	2	16	25
(South Main Street)	1	16	25

County/location	Mkts. /week	Weeks of Mktg	Farmers
NORFOLK			
Brookline	1	20	13
Quincy	1	22	13
SUFFOLK			
Boston			
> Brighams Circle	1	16	1
> Brighton	1	16	3
> Cardinal Cushing Park	1	5	3
> Copley Square	2	44	4
> Fanueil Hall Mkpl.	1	4	2
> Fields Corner	1	16	3
> Jamaica Plain	1	22	1
> Roslindale	1	17	2
> South End	1	16	1
PLYMOUTH			
Brockton			
> Fairgrounds	1	17	4
> City Hall	1	17	6
Hingham	1	25	4
BRISTOL			
Fall River	1	27	30
Taunton	1	19	1
BARNSTABLE			
Falmouth	1	22	3
DUKES			
West Tisbury	1	15	25

Eastern Massachusetts Summary

- 41 market locations
- 44 markets per week in the prime harvest period
- 772 markets for the entire harvest season

STATE TOTALS:

- 55 market locations
- 60 markets per week during the prime period of the harvest season
- 1116 markets for the entire harvest season
- over 450 farmers selling

Roadside Stands/Pick-Your-Own

The following figures represent roadside marketers of vegetables, fruits, Christmas trees, maple syrup, dairy products, eggs, turkeys and other farm produce. Most farm stands are seasonal operations, however some stands are lengthening thier marketing season with the addition of new products through farm-based food processing. Pies, pre-cooked turkeys, apple cider and ice cream are examples of added-value processing which enables farmers to diversify their product line.

County	Communities	Establishments
Western Massachusetts		
Berkshire	9	10
Franklin	10	24
Hampshire	9	24
Hampden	17	55
total	**45**	**113**
Central Massachusetts		
Worcester	31	62
total	**31**	**62**
Eastern Massachusetts		
Essex	19	39
Middlesex	36	92
Suffolk	1	1
Norfolk	18	49
Plymouth	24	81
Bristol	16	83
total	**114**	**345**
Cape Cod and the Islands		
Barnstable	9	21
Dukes	4	8
Nantucket	1	2
total	**14**	**31**
TOTAL	**204**	**551**

Food Manufacturing

TOTAL

- **value:** **$3,764,000,000**
- **employment:** **26,000 employees**
- **food plants:** **570**

Food Manufacturing

Type of Manufacturing	Plants	Employees	Value (millions)
dairy products	85	3,900	869.3
fishery products	74	4,200	642.2
soft drink bottlers	57	3,100	557.7
sugar and confections	49	3,400	470.0
bakery products	109	5,300	385.0
meat products	62	2,400	360.9
preserved fruits and vegetables	35	1,000	140.1
grain mill products	20	300	70.3
fats and oil products	6	200	29.7
miscellaneous	73	2,100	238.6
TOTAL	**570**	**26,000**	**$3,764**

Massachusetts' Food System Employment

Sectors	Number of Employees
farming	15,000
food manufacturing	26,000
food wholesaling	20,000
food stores	76,000
eating and drinking places	140,000
TOTAL	**277,000**

Source: Census of Manufacturing, 1982

Food Manufacturing Plants[(1)] - employment and value by region and county

County	No. of Plants	No. of Employees	Value (millions)
EASTERN MASSACHUSETTS			
Suffolk (meat, sugar, confections, fish)	96	5,800	968.1
Middlesex (bakery, beverage, confections)	108	6,800	934.9
Essex (dairy, beverage)	78	3,200	392.0
Norfolk (dairy, beverage)	47	1,600	343.3
Bristol (bakery)	75	2,500	218.4
Plymouth	27	900	126.2
	431	**20,800**	**$2,982.9**
CENTRAL MASSACHUSETTS			
Worcester (bakery)	54	2,4000	257.9
	54	**2,400**	**257.9**
WESTERN MASSACHUSETTS			
Berkshire	---	< 450	---
Franklin	---	< 450	---
Hampshire	---	---	---
Hampden	41	1,900	319.9
	41	**< 2800**	**319.9**

(1) partial listing

Source: 1982 Census of Manufacturers

Massachusetts Emergency Assistance Program

Land Restoration and Preventative Conservation Practices, 1984-1987

Under laws passed in response to severe farmland flood damage in the Spring of 1984, the State of Massachusetts offers emergency assistance to farmers affected or potentially affected by serious soil loss through flooding. As of April 1, 1988, some two million dollars, out of five million appropriated, remains available to the program.

County	Applications	Projects in Process	Projects Completed.	Estimated Cost	Actual Cost	Federal Cost	State Costs
Berkshire	61	18	43	$2,235,200	$522,562.32	$20,409.00	$427,839.19
Bristol	7	6	1	$181,355	$12,200	0	$10,370
Dukes	1	0	1	$37,400	$69,966.37	0	$53,873.60
Essex	12	5	7	$68,536	$47,994.73	$1735.00	$39,060.52
Franklin	71	30	41	$1,130,768	$585,210.19	$31,872.00	$465,004.18
Hampden	39	27	12	$322,740	$58,762.53	$7000.00	$42,947.70
Hampshire	137	45	92	$1,566,236	$1,098,804.07	$83,454.00	$738,201.08
Middlesex	22	13	9	$217,881	$86,215.04	0	$73,282.78
Norfolk	7	5	2	$161,000	$74,025.00	0	$62,921.25
Plymouth	21	10	11	$434,000	$348,922.73	$1250.00	$295,393.82
Worcester	107	58	49	$736,672	$352,497.49	$4784.00	$294,862.13
TOTAL	**485**	**217**	**268**	**$7,091,788**	**$3,257,230.20**	**$150,504**	**$2,503,755.90**
USDA-SCS Engineering and Design							$176,203.35
Interest Payments Crop Loss, Physical Loss							$121,807.75
Total State Funds Expended							**$2,801,766.90**
State Funds Available							$2,198,233.10

Massachusetts Agricultural Statistics

National Agricultural Statistics Service
New England Agricultural Statistics
22 Bridge Street
Concord, NH 03301

Charles W. Hammond, State Statistician
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Contents

LIVESTOCK HIGHLIGHTS

INVENTORY

Cattle and calves on Massachusetts farms on January 1, 1987 numbered 85,000 head, a 15 percent decline from January 1, 1986. This inventory consisted of 38,000 milk cows, 11,000 beef cows, 16,000 heifers 500 pounds and over, 4,000 steers and bulls, and 16,000 calves. The 1986 calf crop (calves born) was estimated at 47,000 head, down 8 percent from 1985. The decrease in both the inventory of cattle and calves and calf crop was mostly due to the United States Government Dairy Termination Program. The average value per head on January 1, 1987 was $570, up $10 from the previous year, but $230 less than the record high average value of $800 set on January 1, 1982. Reduced cattle numbers more than offset the increased average value per head, resulting in a January 1, 1987 total inventory value of $48.5 million, 13 percent below the total inventory value of $56.0 million on January 1, 1986.

Sheep and lambs inventory increased to 15,000 head on January 1, 1987, up 5,000 from a year earlier. Although this year's average value per head, at $109, was lower than that of the previous year, the total inventory on January 1, 1987 was valued at $1.6 million, 34 percent higher than a year earlier. The 1986 lamb crop consisted of 11,000 lambs born, and increase of 29 percent from 1985.

Massachusetts hogs and pigs on December 1, 1986 numbered 32,000 head, 6 percent below the number on hand December 1, 1985 and the lowest level on record. The 2,000 head decline was caused by 1,000 fewer breeding hogs and 1,000 fewer pigs held for market. Total inventory was valued at $2,880,000, bringing the average value per head to $90, up $1 from 1985. The Massachusetts pig crop numbered 38,000 head in 1986, and was 2,000 less than the 1985 crop and the smallest pig crop on record.

PRODUCTION AND MARKETINGS:

The 1986 marketings of cattle and calves numbered 56,000 head, with a total liveweight of 29.6 million pounds, up 14.8 million pounds from 1985. The number of calves marketed was down 4,000 head from a year ago; however, cattle marketings increased by 16,000 head. Farmers received an average of $42.00 and $53.00 per cwt. for cattle and calves respectively during 1986; cattle prices were $2.00 higher than the previous year's, while calve prices increased by $7.00 per cwt.

Wool produced during 1986 totaled 85,000 pounds compared with 71,000 pounds the year before. The increase was a result of more sheep shorn, as the average weight per fleece remained the same in both years. At an average price of 59¢ per pound, the wool produced in 1986 had a value of $50,000. Production of lamb and mutton in 1986 totaled 907,000 pounds live weight, up 30 percent from 1985, while marketings declined from 689,000 pounds in 1985 to 334,000 in 1986. Gross income from marketings was $490,000.

Massachusetts pork producers marketed a total of 8.7 million pounds of pork in 1986, a 10 percent decline from 1985. As a result, gross income in 1986 decreased to $4.2 million despite a higher price per cwt. Producers received an average price of $46 per cwt. in 1986, up $5 from 1985.

MINK

Massachusetts 1986 mink pelt production totaled 11,800, down 2,100 pelts from year-earlier levels of 13,900 pelts. Of the pelts produced in 1986, 21 percent were Standard, 10 percent were Pastel, 26 percent were Pearl, and 43 percent were other colors. Mink females bred to produce kits in 1987, at 3,900, showed an increase of 700 from the previous year.

CATTLE: NUMBER AND VALUE OF ALL CATTLE AND CALVES ON FARMS JANUARY 1, MASSACHUSETTS, 1976 - 1987

YEAR	NUMBER	VALUE	
		PER HEAD	TOTAL
	1,000	Dollars	1,000 Dollars
1976	107	345	36,915
1977	104	380	39,520
1978	99	415	41,085
1979	102	560	57,120
1980	104	690	71,760
1981	104	785	81,640
1982	98	800	78,400
1983	103	700	72,100
1984	98	595	58,310
1985	100	565	56,500
1986	100	560	56,000
1987	85	570	48,450

CATTLE: JANUARY 1, INVENTORY BY CLASSES, MASSACHUSETTS, 1976 - 1987

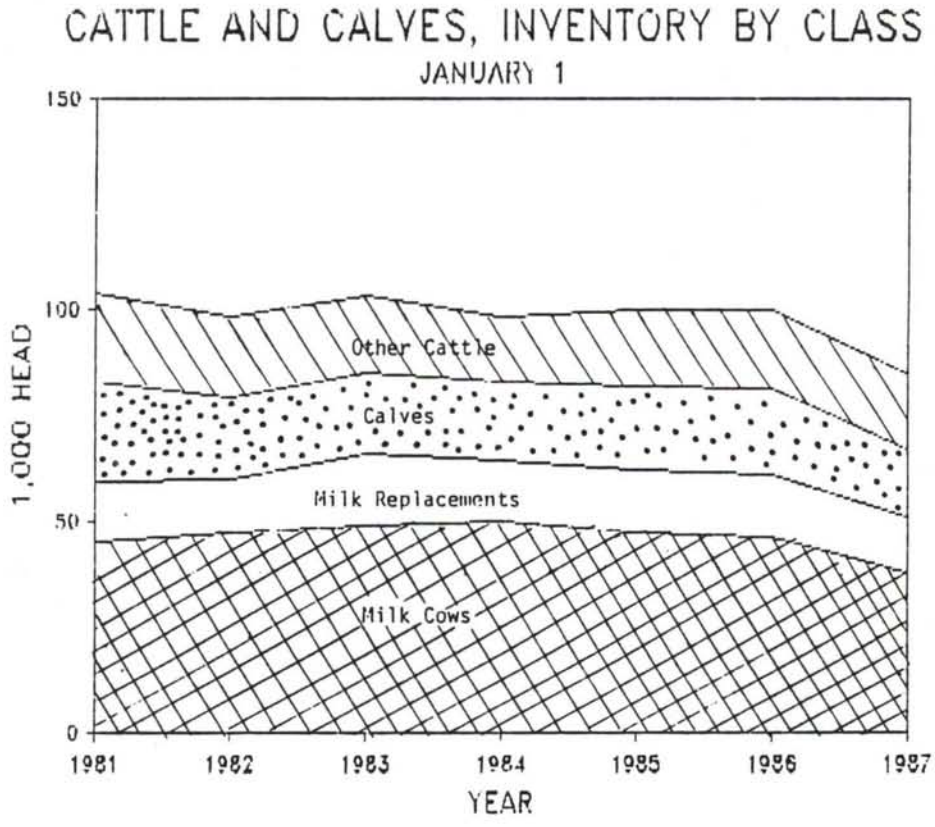
YEAR	ALL CATTLE AND CALVES	COWS & HEIFERS THAT HAVE CALVED		HEIFERS 500 LBS. & OVER			STEERS 500 LBS.+	BULLS 500 LBS.+	STEERS, HEIFERS & BULLS -500 LBS.
				REPLACEMENTS		OTHER			
		BEEF	MILK	BEEF COW	MILK COW				
					1,000				
1976	107	9	55	2	17	1	3	2	18
1977	104	9	53	2	17	1	2	2	18
1978	99	8	51	2	16	1	2	2	17
1979	102	10	49	3	16	1	2	2	19
1980	104	9	46	3	16	1	3	2	24
1981	104	10	45	4	14	1	4	2	24
1982	98	10	47	3	13	1	3	2	19
1983	103	10	49	2	17	1	3	2	19
1984	98	8	50	2	14	1	2	2	19
1985	100	9	47	3	15	1	3	2	20
1986	100	10	46	3	15	1	3	2	20
1987	85	11	38	2	13	1	3	1	16

CATTLE AND CALVES: PRODUCTION AND INCOME, MASSACHUSETTS, 1976 - 1986

YEAR	PRODUCTION	MARKETINGS	PRICE PER 100 POUNDS		VALUE OF HOME CONSUMPTION	GROSS INCOME
			CATTLE	CALVES		
	1,000 Pounds		Dollars		1,000 Dollars	
1976	33,620	40,230	26.00	28.50	559	11,071
1977	33,240	40,790	26.20	38.20	676	11,591
1978	27,080	26,560	41.90	57.00	1,441	12,846
1979	22,058	21,858	57.00	76.00	1,471	14,258
1980	24,650	22,830	55.00	71.00	1,892	14,651
1981	21,650	21,610	50.00	63.00	1,290	12,424
1982	17,310	9,390	45.00	57.00	1,548	6,022
1983	20,080	22,930	42.00	52.00	1,646	11,483
1984	20,090	14,910	42.00	52.00	1,659	8,137
1985	16,990	14,890	40.00	46.00	1,192	7,334
1986	19,260	29,640	42.00	53.00	1,226	13,972

CATTLE AND CALVES: INVENTORY, SUPPLY AND DISPOSITION, MASSACHUSETTS, 1976 - 1986

YEAR	ALL CATTLE ON HAND JAN. 1	CALF CROP	INSHIPMENTS	MARKETINGS		FARM SLAUGHTER CATTLE & CALVES	DEATHS	
				CATTLE	CALVES		CATTLE	CALVES
				1,000				
1976	107	55	7	34	22	1	2	6
1977	104	52	7	35	20	1	2	6
1978	99	50	5	23	19	2	2	6
1979	102	47	1	19	18	1	2	6
1980	104	45	1	21	14	1	3	7
1981	104	47	1	20	23	1	3	7
1982	98	48	1	10	23	1	3	7
1983	103	48	1	23	23	1	2	5
1984	98	50	1	16	24	1	2	6
1985	100	51	1	13	31	1	2	5
1986	100	47	1	29	27	1	2	4



HOGS: NUMBER AND VALUE ON FARMS, DECEMBER 1, MASSACHUSETTS, 1975 - 1986

YEAR	NUMBER			VALUE	
	BREEDING	MARKET	TOTAL	PER HEAD	TOTAL
		Head		Dollars	1,000 Dollars
1975	8,000	42,000	50,000	64.50	3,225
1976	7,000	43,000	50,000	50.50	2,525
1977	8,000	52,000	60,000	59.50	3,570
1978	8,000	52,000	60,000	76.50	4,590
1979	9,000	51,000	60,000	55.50	3,330
1980	7,000	42,000	49,000	74.50	3,651
1981	6,000	43,000	49,000	79.50	3,896
1982	7,000	39,000	46,000	88.50	4,071
1983	7,000	35,000	42,000	79.00	3,318
1984	5,000	35,000	40,000	78.50	3,140
1985	5,000	29,000	34,000	89.00	3,026
1986	4,000	28,000	32,000	90.00	2,880

HOGS: PIG CROP, SOWS FARROWED AND PIGS SAVED, MASSACHUSETTS, 1976 - 1986

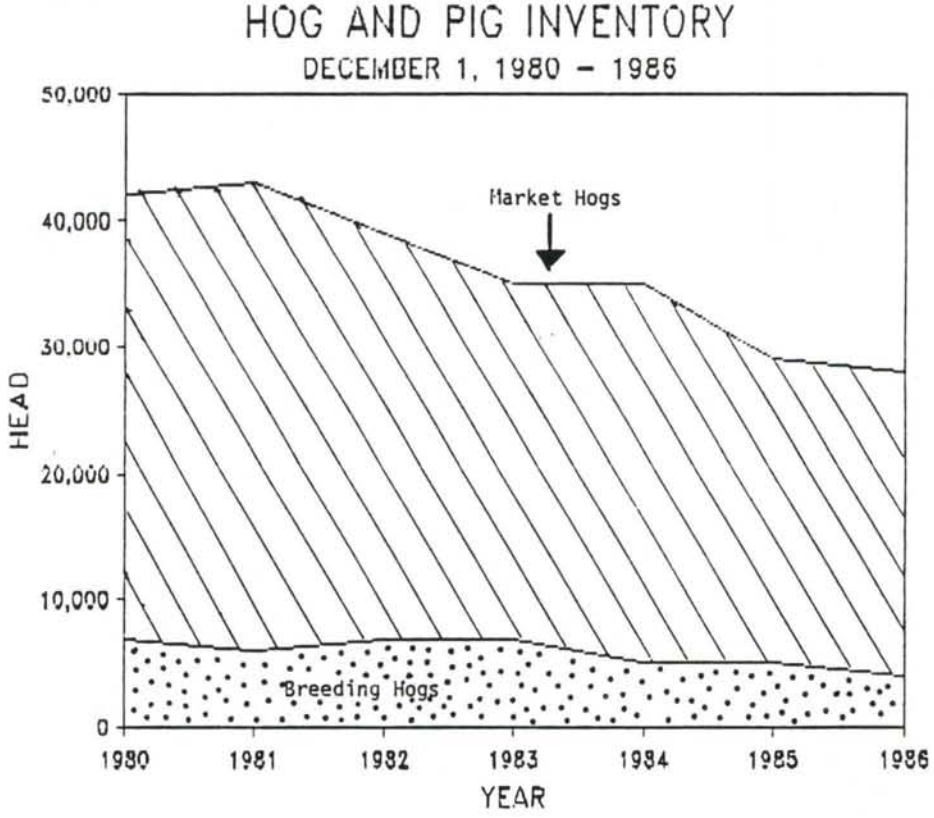
YEAR	SPRING CROP (DEC - MAY)			FALL CROP (JUN - NOV)			TOTAL PIG CROP
	SOWS	PIGS / LITTER	PIGS SAVED	SOWS	PIGS / LITTER	PIGS SAVED	
			Head				
1976	6,600	6.8	45,000	5,700	6.5	37,000	82,000
1977	5,000	6.9	35,000	6,500	6.6	43,000	78,000
1978	5,000	7.2	36,000	6,000	6.8	41,000	77,000
1979	6,000	6.5	39,000	6,500	6.5	42,000	81,000
1980	4,000	7.4	30,000	6,000	5.8	35,000	65,000
1981	4,000	6.6	26,000	5,000	6.4	32,000	58,000
1982	3,700	7.5	28,000	4,500	7.6	34,000	62,000
1983	4,900	6.5	32,000	4,000	7.0	28,000	60,000
1984	3,700	6.9	26,000	3,700	6.5	24,000	50,000
1985	3,200	6.2	20,000	3,000	6.5	20,000	40,000
1986	3,000	6.3	19,000	2,800	6.8	19,000	38,000

HOGS: INVENTORY NUMBER, PIG CROP AND DISPOSITION, MASSACHUSETTS, 1976 - 1986

YEAR	ON HAND DEC 1st PREVIOUS YEAR	PIG CROP		MARKETINGS	FARM SLAUGHTER	DEATHS
		DEC - MAY	JUN - NOV			
			Head			
1976	50,000	45,000	37,000	75,000	1,000	6,000
1977	50,000	35,000	43,000	61,000	1,000	6,000
1978	60,000	36,000	41,000	71,000	1,000	5,000
1979	60,000	39,000	42,000	76,000	1,000	4,000
1980	60,000	30,000	35,000	71,000	2,000	3,000
1981	49,000	26,000	32,000	55,000	1,000	2,000
1982	49,000	28,000	34,000	61,000	1,000	3,000
1983	46,000	32,000	28,000	59,000	2,000	3,000
1984	42,000	26,000	24,000	49,000	1,000	2,000
1985	40,000	20,000	20,000	42,000	1,000	3,000
1986	34,000	19,000	19,000	37,000	1,000	2,000

HOGS: PRODUCTION AND INCOME, MASSACHUSETTS, 1976 - 1986

YEAR	PRODUCTION	MARKETINGS	PRICE PER 100 POUNDS	VALUE OF HOME CONSUMPTION	GROSS INCOME
	1,000 Pounds		Dollars	1,000 Dollars	
1976	17,891	17,378	45.00	354	8,174
1977	15,832	14,063	37.00	291	5,494
1978	17,211	16,640	45.00	304	7,792
1979	18,640	17,820	44.00	297	8,138
1980	16,412	16,185	37.00	500	6,488
1981	13,267	12,825	43.00	290	5,805
1982	14,547	14,380	54.00	316	8,081
1983	11,651	11,010	42.00	378	5,002
1984	9,745	9,600	46.00	269	4,685
1985	9,836	9,630	41.00	314	4,262
1986	9,000	8,715	46.00	207	4,216



SHEEP AND LAMBS: INVENTORY NUMBER BY CLASS AND VALUE, JANUARY 1, MASSACHUSETTS, 1976 - 1987

YEAR	LAMBS			ONE YEAR AND OVER		ALL SHEEP & LAMBS	VALUE	
	ALL LAMBS	EWES	WETHERS AND RAMS	EWES	WETHERS AND RAMS		PER HEAD	TOTAL
			Head				Dollars	1,000 Dollars
1976	1,500	1,100	400	5,300	400	7,200	46.00	331
1977	1,400	1,000	400	4,900	400	6,700	48.00	322
1978	1,600	1,100	500	4,700	500	6,800	53.50	364
1979	1,300	1,000	300	4,900	500	6,700	63.00	422
1980	2,500	2,000	500	7,000	500	10,000	78.00	780
1981	2,000	1,600	400	6,400	600	9,000	88.00	792
1982	2,600	2,000	600	8,000	400	11,000	109.00	1,199
1983	2,600	2,000	600	7,000	400	10,000	104.00	1,040
1984	2,200	1,700	500	8,000	800	11,000	103.00	1,133
1985	2,400	1,700	700	8,000	600	11,000	121.00	1,331
1986	2,300	1,700	600	7,000	700	10,000	122.00	1,220
1987	4,500	3,200	1,300	9,700	800	15,000	109.00	1,635

SHEEP AND LAMBS: INVENTORY NUMBERS, LAMB CROP AND DISPOSITION, MASSACHUSETTS, 1976 - 1986

YEAR	ALL SHEEP AND LAMBS ON HAND JAN. 1	LAMB CROP	MARKETINGS		FARM SLAUGHTER SHEEP & LAMBS	DEATHS SHEEP & LAMBS
			SHEEP	LAMBS		
			Head			
1976	7,200	5,600	1,500	3,300	300	1,000
1977	6,700	5,700	1,100	3,100	400	1,000
1978	6,800	5,300	1,000	2,900	500	1,000
1979	6,700	5,500	800	2,000	500	900
1980	10,000	7,200	2,600	3,800	600	1,200
1981	9,000	7,500	100	3,200	900	1,300
1982	11,000	9,100	3,300	5,200	300	1,300
1983	10,000	8,200	900	5,000	200	1,100
1984	11,000	10,000	2,000	6,500	300	1,200
1985	11,000	8,500	3,000	5,000	500	1,000
1986	10,000	11,000	0	4,900	600	1,500

SHEEP AND LAMBS: PRODUCTION AND INCOME, MASSACHUSETTS, 1976 - 1986

YEAR	PRODUCTION	MARKETINGS	PRICE PER 100 POUNDS		VALUE OF HOME CONSUMPTION	GROSS INCOME
			SHEEP	LAMBS		
	1,000 Pounds		Dollars		1,000 Dollars	
1976	382	393	28.00	72.00	35	244
1977	431	357	29.00	72.00	46	244
1978	406	329	38.00	84.00	67	282
1979	474	210	39.00	85.00	82	215
1980	586	573	42.00	77.00	89	416
1981	479	170	45.00	100.00	89	252
1982	602	654	41.00	94.00	68	465
1983	708	465	36.00	93.00	80	453
1984	801	720	36.00	96.00	91	644
1985	699	689	40.00	106.00	135	638
1986	907	334	41.00	104.00	142	490

WOOL: PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	SHEEP SHORN	WEIGHT PER FLEECE	SHORN WOOL PRODUCTION	PRICE PER POUND	VALUE
	Head	Pounds	1,000 Pounds	Cents	1,000 Dollars
1976	6,700	6.9	46	60	28
1977	6,200	7.1	44	78	34
1978	6,300	6.8	43	74	32
1979	7,000	6.9	48	84	40
1980	9,000	6.9	62	88	55
1981	10,000	6.9	69	90	62
1982	10,000	6.8	68	66	45
1983	11,000	6.9	76	63	48
1984	10,000	7.3	73	67	49
1985	10,000	7.1	71	62	44
1986	12,000	7.1	85	59	50

MINK: PRODUCTION AND FEMALES BRED TO PRODUCE KITS, MASSACHUSETTS, 1982 - 1987 1/

COLOR CLASS	PELTS PRODUCED					FEMALES BRED TO PRODUCE KITS				
	1982	1983	1984	1985	1986	1983	1984	1985	1986	1987
Standard	1,700	1,400	2,200	2,200	2,500	500	560	710	600	1,200
Demi-Buff	4,000	3,900	5,900	5,300	2/	1,200	2/	1,200	700	2/
Pastel	1,900	2,300	1,600	1,300	1,200	360	590	470	500	2/
Pearl	2,800	2/	3,500	2/	3,100	880	830	880	2/	800
Others	2,700	4,900	2,400	5,100	5,000	760	2,220	740	1,400	1,900
TOTAL	13,100	12,500	15,600	13,900	11,800	3,700	4,200	4,000	3,200	3,900

1/ Estimates not available for 1981 production and 1982 Females bred to produce Kits.
2/ Included in others to avoid disclosing individual operations.

DAIRY HIGHLIGHTS

PRODUCTION AND MARKETINGS

Milk production on Massachusetts farms totaled a record low 561 million pounds in 1986, 6 percent lower than year-earlier levels. The number of milk cows decreased to a record low average of 43,000 head, down 4,000 from the 1985 average. The number of milk cows has generally been on a decline since 1924's record high average of 148,000 head. With all the record lows set in 1986, the rate of production set a record high 13,047 pounds per cow. This continues the long term upward trend, up 387 pounds from a year ago.

Dairymen used 6 million pounds of milk to feed calves and 2 million pounds for home use in 1986. The amount utilized for the home use remained unchanged from the previous year, but the quantity fed to calves was 2 million pounds lighter than a year ago. Five hundred fifty-three million pounds of milk were marketed, with an average price received for milk of $13.80 per cwt. during 1986. Decreases in both the amount of milk produced and average price per cwt. resulted in a 1986 cash receipts of only $76.3 million, a drop of $6.13 million below 1985 total.

MANUFACTURED DAIRY PRODUCTS

Massachusetts dairy plants manufactured a combined total of 53.7 million gallons of ice cream, ice milk and milk sherbet for 1986, a 5 percent decrease from last year's yield of 56.4 million gallons. Ice cream production totaled 45.2 million gallons, 4 percent below 1985 levels. There were 6.79 million gallons of ice milk produced in 1986, down 9 percent from the preceding year. Milk sherbet production totaled 1.73 million gallons, 13 percent lower than in 1985.

MILK COWS: AVERAGE NUMBER ON FARMS, BY QUARTERS AND ANNUAL, MASSACHUSETTS, 1976 - 1986

YEAR	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC	ANNUAL
			1,000		
1976	55	54	53	53	54
1977	52	51	51	51	51
1978	50	48	48	49	49
1979	49	48	47	46	48
1980	46	46	46	46	46
1981	45	46	47	47	46
1982	47	47	46	47	47
1983	49	49	46	48	48
1984	49	48	47	47	48
1985	47	47	46	46	47
1986	46	46	41	39	43

MILK PRODUCTION: AVERAGE PER COW, BY QUARTERS AND ANNUAL, MASSACHUSETTS, 1976 - 1986

YEAR	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC	ANNUAL
			Pounds		
1976	2,735	2,950	2,760	2,700	11,074
1977	2,850	3,060	2,890	2,870	11,706
1978	2,900	3,110	2,920	2,820	11,673
1979	2,920	3,090	2,940	2,980	11,792
1980	3,110	3,240	3,000	3,050	12,391
1981	3,180	3,295	3,020	3,000	12,565
1982	3,190	3,320	3,180	3,185	12,809
1983	3,190	3,245	3,200	3,150	12,771
1984	3,080	3,020	2,880	3,020	11,938
1985	3,190	3,230	3,150	3,220	12,660
1986	3,320	3,270	3,150	3,320	13,047

MILK PRODUCTION, BY QUARTERS AND ANNUAL, MASSACHUSETTS, 1976 - 1986

YEAR	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC	ANNUAL
			Million Pounds		
1976	150	159	146	143	598
1977	148	156	147	146	597
1978	145	149	140	138	572
1979	143	148	138	137	566
1980	143	149	138	140	570
1981	143	152	142	141	578
1982	150	156	146	150	602
1983	156	159	147	151	613
1984	151	145	135	142	573
1985	150	152	145	148	595
1986	153	150	129	129	561

MILK: QUANTITY MARKETED, PRICE AND CASH RECEIPTS, MASSACHUSETTS, 1976 - 1986

YEAR	SOLD TO PLANTS			SOLD DIRECTLY TO CONSUMERS			COMBINED MARKETINGS		
	QUANTITY	PRICE PER CWT.	CASH RECEIPTS	QUANTITY	PRICE PER QUART	CASH RECEIPTS	QUANTITY	PRICE PER CWT.	CASH RECEIPTS
	Million Pounds	Dollars	1,000 Dollars	Million Quarts	Cents	1,000 Dollars	Million Pounds	Dollars	1,000 Dollars
1976	550	10.70	58,850	16.7	42	7,032	586	11.24	65,882
1977	550	10.70	58,850	16.7	42	7,032	586	11.24	65,882
1978	530	11.50	60,950	14.9	43	6,400	562	11.98	67,350
1979	525	12.80	67,200	14.4	46	6,633	556	13.28	73,833
1980	530	13.70	72,610	14.0	51	7,116	560	14.24	79,726
1981	540	14.60	78,840	13.5	53	7,149	569	15.11	85,989
1982	565	14.50	81,925	13.5	53	7,149	594	15.00	89,074
1983	575	14.60	83,950	13.0	53	6,902	603	15.07	90,852
1984	540	14.40	77,760	10.7	53	5,670	563	14.82	83,430
1985	565	13.70	77,405	9.3	54	5,023	585	14.09	82,428
1986	535	13.40	71,690	8.4	55	4,605	553	13.80	76,295

MILK: QUANTITIES USED AND MARKETED BY FARMERS, MASSACHUSETTS, 1976 - 1986

YEAR	TOTAL PRODUCED	MILK, USED ON FARMS WHERE PRODUCED			MILK MARKETED BY FARMERS		
		USED FOR MILK, CREAM AND BUTTER	FED TO CALVES	TOTAL	SOLD TO PLANTS AND DEALERS	SOLD DIRECTLY TO CONSUMERS	TOTAL
	Million Pounds						
1976	598	7	5	12	550	36	586
1977	597	6	5	11	550	36	586
1978	572	5	5	10	530	32	562
1979	566	4	6	10	525	31	556
1980	570	4	6	10	530	30	560
1981	578	4	5	9	540	29	569
1982	602	3	5	8	565	29	594
1983	613	2	8	10	575	28	603
1984	573	2	8	10	540	23	563
1985	595	2	8	10	565	20	585
1986	561	2	6	8	535	18	553

MILK SOLD TO PLANTS: MONTHLY AND ANNUAL AVERAGE PRICE PER 100 POUNDS RECEIVED BY FARMERS, MASSACHUSETTS, 1976 - 1986

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE
	Dollars												
1976	11.10	10.80	10.70	10.00	9.90	9.75	10.40	11.00	11.30	11.50	11.20	10.70	10.70
1977	10.60	10.50	10.20	10.20	9.90	10.00	10.50	10.90	11.20	11.40	11.40	11.20	10.70
1978	11.10	11.20	11.00	10.70	10.70	10.60	11.00	11.60	12.10	12.70	12.90	12.70	11.50
1979	12.70	12.80	12.50	12.20	12.00	12.00	12.50	13.10	13.40	13.80	13.90	13.40	12.80
1980	13.60	13.40	13.30	13.00	13.00	12.80	13.30	13.70	14.20	14.70	14.80	14.70	13.70
1981	14.90	14.70	14.50	14.30	14.00	13.80	14.30	14.60	14.90	15.20	15.00	14.80	14.60
1982	14.90	14.70	14.50	14.20	13.80	13.70	14.20	14.60	14.90	15.00	15.10	14.80	14.50
1983	14.80	14.80	14.40	14.30	13.90	13.80	14.20	14.70	14.90	15.10	15.20	14.60	14.60
1984	14.60	14.30	14.10	13.90	13.80	13.60	14.00	14.50	14.90	15.30	15.40	14.90	14.40
1985	14.90	14.60	14.10	13.60	13.20	12.70	13.20	13.40	13.60	13.80	13.80	13.60	13.70
1986	13.40	13.30	13.00	12.70	12.60	12.50	13.10	13.70	14.10	14.50	14.70	14.40	13.40

MILK: PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	AVERAGE NUMBER OF MILK COWS	PRODUCTION					
		PER MILK COW		PERCENTAGE OF FAT IN ALL MILK PRODUCED	TOTAL		VALUE OF MILK PRODUCED
		MILK	MILKFAT		MILK	MILKFAT	
	1,000	Pounds		Percent	Million Pounds		1,000 Dollars
1976	54	11,074	405	3.66	598	22	67,215
1977	51	11,706	431	3.68	597	22	67,103
1978	49	11,673	428	3.67	572	21	68,526
1979	48	11,792	429	3.64	566	21	75,160
1980	46	12,391	447	3.61	570	21	81,150
1981	46	12,565	456	3.63	578	21	87,349
1982	47	12,809	466	3.64	602	22	90,273
1983	48	12,771	469	3.67	613	23	92,359
1984	48	11,938	445	3.73	573	21	84,912
1985	47	12,660	471	3.72	595	22	83,837
1986	43	13,047	488	3.74	561	21	77,398

MANUFACTURED DAIRY: PRODUCTION MAJOR FROZEN PRODUCTS, MASSACHUSETTS, 1976 - 1986

YEAR	ICE CREAM	ICE MILK	MILK SHERBET
	1,000 Pounds	1,000 Gallons	
1976	46,320	7,246	2,116
1977	45,255	7,483	2,180
1978	42,909	9,779	2,102
1979	42,463	10,454	1,829
1980	43,986	9,817	1,992
1981	43,193	10,173	2,089
1982	44,444	6,574	2,198
1983	44,510	9,138	2,297
1984	46,862	7,802	2,155
1985	46,992	7,442	1,991
1986	45,186	6,792	1,733

POULTRY HIGHLIGHTS

EGGS:

In 1986, 315 million eggs were produced by laying flocks in Massachusetts. This was 23 percent more than in 1985. Average daily rate of lay was 72.2 eggs per 100 layers, an increase over 68.6 in 1985. Average price received was 94¢ per dozen, down 4¢ from 1985. Value of egg production increased to nearly $25 million from $21 million in 1985.

CHICKENS:

As of December 1, 1986, the total number of chickens was 1.3 million, down 1.4 million in 1985. Hens and pullets of laying age comprised 86 percent of the total, compared with 76 percent in 1985. Total value of chickens was $2.6 million, down from $3.9 million in 1985. Value per bird was $1.95, down 90¢ from 1985.

TURKEYS

Total number of turkeys raised in the Commonwealth was 145,000 birds, a decline from the 1985 number of 156,000. Production totaled 3.1 million pounds, down slightly from 3.2 million pounds in 1986. Value of production remained at the 1985 level of $2.8 million.

POULTRY: INVENTORY BY CLASS AND VALUE, MASSACHUSETTS, DECEMBER 1, 1975 - 1986

YEAR	CHICKENS, EXCLUDING BROILERS						VALUE PER HEAD	TOTAL VALUE
	HENS AND PULLETS OF LAYING AGE		PULLETS NOT OF LAYING AGE		OTHER	TOTAL		
	HENS	PULLETS	3 MONTHS AND OLDER	UNDER 3 MONTHS				
	1,000						Dollars	1,000 Dollars
1975	725	786	293	268	19	2,091	2.35	4,914
1976	593	782	239	241	15	1,870	2.40	4,488
1977	465	1,005	290	180	50	1,990	2.05	4,080
1978	550	620	196	174	40	1,580	2.05	3,239
1979	617	755	126	197	31	1,726	2.15	3,711
1980	644	811	108	209	18	1,790	2.30	4,117
1981	650	622	141	153	37	1,603	2.55	4,088
1982	742	458	156	166	18	1,540	2.55	3,927
1983	595	514	110	138	21	1,378	2.45	3,376
1984	651	450	160	225	34	1,520	2.60	3,952
1985	360	680	192	109	24	1,365	2.85	3,890
1986	500	630	30	130	20	1,310	1.95	2,555

POULTRY: AVERAGE NUMBER OF LAYERS BY QUARTERS AND ANNUAL, MASSACHUSETTS, 1976 - 1986

QUARTER	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
						1,000					
DEC-FEB 1/	1,491	1,483	1,430	1,330	1,331	1,365	1,345	1,155	1,089	1,040	1,189
MAR-MAY	1,413	1,521	1,496	1,433	1,330	1,318	1,340	1,036	1,083	964	1,255
JUN-AUG	1,414	1,518	1,373	1,411	1,321	1,209	1,272	1,027	1,031	997	1,177
SEP-NOV	1,401	1,425	1,353	1,374	1,397	1,323	1,230	1,030	1,034	1,105	1,156
ANNUAL	1,430	1,487	1,413	1,387	1,345	1,303	1,297	1,062	1,059	1,026	1,195

EGGS: DAILY RATE OF LAY BY QUARTERS AND ANNUAL, MASSACHUSETTS, 1976 - 1986

QUARTER	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
						Percent					
DEC-FEB 1/	66.3	64.4	64.5	67.7	67.6	65.1	66.9	67.3	69.4	68.4	74.8
MAR-MAY	66.9	65.7	66.1	66.7	67.0	68.5	66.5	68.2	70.3	68.8	71.9
JUN-AUG	66.1	66.6	66.5	65.5	65.0	69.2	66.7	68.8	70.6	67.6	72.0
SEP-NOV	63.5	64.8	67.4	68.0	66.1	67.3	65.2	69.4	67.0	69.6	70.3
ANNUAL	65.5	65.4	66.1	67.0	66.2	67.4	66.3	68.5	69.1	68.6	72.2

EGGS: TOTAL PRODUCTION BY QUARTERS AND ANNUAL, MASSACHUSETTS, 1976 - 1986

QUARTER	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
						Million					
DEC-FEB 1/	89	86	83	81	81	80	81	70	68	64	80
MAR-MAY	87	92	91	88	82	83	82	65	70	61	83
JUN-AUG	86	93	84	85	79	77	78	65	67	62	78
SEP-NOV	81	84	83	85	84	81	73	65	63	70	74
ANNUAL	343	355	341	339	326	321	314	265	268	257	315

1/ December previous year

CHICKENS: LOST, SOLD AND VALUE OF SALES, MASSACHUSETTS, 1976 - 1986

YEAR	NUMBER LOST	SOLD		PRICE PER POUND	VALUE OF SALES
		NUMBER	LIVEWEIGHT		
	1,000		1,000 Pounds	Cents	1,000 Dollars
1976	140	1,300	7,150	13.3	958
1977	170	1,200	6,600	11.3	752
1978	130	1,300	7,150	12.3	885
1979	100	900	4,950	13.2	660
1980	107	1,150	6,325	8.3	529
1981	91	1,650	9,075	9.0	822
1982	104	880	4,840	8.0	391
1983	86	989	5,440	10.5	576
1984	81	708	3,894	16.5	651
1985	77	1,107	6,089	12.0	731
1986	92	1,168	6,190	9.0	557

EGGS: PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	EGGS PRODUCED	PRICE PER DOZEN	VALUE OF PRODUCTION
	Million	Cents	1,000 Dollars
1976	343	72.1	20,609
1977	355	69.9	20,679
1978	341	66.2	18,812
1979	339	73.8	20,849
1980	326	74.5	20,239
1981	321	86.0	23,005
1982	314	84.0	21,980
1983	265	91.0	20,096
1984	268	109.0	24,344
1985	257	98.0	20,988
1986	315	94.0	24,675

TURKEYS: PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	NUMBER RAISED	POUNDS PRODUCED	PRICE PER POUND	VALUE OF PRODUCTION
	1,000	1,000 Pounds	Cents	1,000 Dollars
1976	143	2,860	58	1,659
1977	125	2,600	58	1,508
1978	146	2,993	68	2,035
1979	140	2,800	65	1,820
1980	126	2,470	78	1,926
1981	145	3,045	77	2,345
1982	145	3,089	77	2,378
1983	160	3,312	84	2,782
1984	152	3,314	83	2,750
1985	156	3,229	86	2,777
1986	145	3,103	91	2,824

HATCH: BROILER-TYPE CHICKS BY COMMERCIAL HATCHERIES, NEW ENGLAND, 1979 - 1986

MONTH	1979	1980	1981	1982	1983	1984	1985	1986
				1,000				
JANUARY	8,742	6,691	6,770	2,712	2,043	2,668	2,095	1,776
FEBRUARY	8,103	6,617	5,665	2,548	2,699	2,707	2,239	1,570
MARCH	9,093	7,535	6,391	2,876	2,721	2,604	2,618	2,699
APRIL	9,192	7,252	4,645	3,115	2,890	2,686	2,739	2,659
MAY	9,424	7,545	3,294	3,047	2,841	2,491	2,472	2,330
JUNE	9,216	7,524	3,129	2,910	2,528	2,690	2,250	2,470
JULY	9,216	7,495	3,107	2,774	2,440	2,562	2,306	1,954
AUGUST	8,796	7,620	2,888	2,948	2,249	2,669	1,975	2,042
SEPTEMBER	7,385	6,783	2,844	2,980	2,303	2,165	2,261	2,275
OCTOBER	6,903	6,654	2,672	2,687	2,317	2,382	1,919	2,136
NOVEMBER	6,875	6,857	2,401	2,297	2,143	2,175	2,037	2,115
DECEMBER	7,292	6,999	2,391	2,493	2,511	2,226	2,659	2,385
ANNUAL	100,237	85,572	46,197	33,387	29,685	30,025	27,570	26,411

HATCH: EGG-TYPE CHICKS BY COMMERCIAL HATCHERIES, NEW ENGLAND, 1979 - 1986

MONTH	1979	1980	1981	1982	1983	1984	1985	1986
				1,000				
JANUARY	1,860	2,150	1,767	1,102	1,626	1,911	1,670	1,700
FEBRUARY	1,936	1,899	1,837	1,230	1,370	1,828	1,580	1,456
MARCH	2,128	1,990	2,024	1,685	2,008	2,385	1,709	1,695
APRIL	2,470	1,797	2,060	2,015	1,947	2,299	2,137	1,664
MAY	2,440	2,098	1,954	2,221	2,018	1,981	1,858	1,803
JUNE	2,165	1,899	1,970	1,763	2,070	2,269	1,689	1,766
JULY	2,131	1,782	1,676	1,646	1,716	1,891	1,465	1,327
AUGUST	2,270	2,097	1,647	1,368	1,687	1,862	1,814	1,229
SEPTEMBER	1,438	1,714	1,748	1,426	1,894	1,613	1,635	1,464
OCTOBER	1,938	1,934	1,896	1,603	1,669	2,034	1,777	1,784
NOVEMBER	2,071	1,693	1,538	1,512	1,797	1,912	1,718	1,273
DECEMBER	2,233	1,738	1,467	1,740	2,094	1,909	1,732	1,737
ANNUAL	25,080	22,791	21,584	19,311	21,896	23,894	20,784	18,898

CROP HIGHLIGHTS

CORN SILAGE:

Corn silage production in the Commonwealth totaled 648,000 tons in 1986, 13 percent under the 1985 silage crop. Growers cut back planted acres to 43,000 acres, due in part to participation in the Dairy Herd Buyout Program. A less than optimal corn season also contributed to the reduced output. Cool, wet weather made this year's corn crop slow to mature, and rains slowed harvest progress. Farmers harvested 36,000 acres as silage, and the crop weighed in at an average of 18 tons per acre. Value of the 1986 silage crop totaled $18.1 million, 18 percent under the previous year.

HAY:

Hay output from Massachusetts farms totaled 325,000 tons in 1986, 17 percent above 1985, and the biggest crop in the Commonwealth since 1963. An unusually wet season promoted excellent hay growth, but growers battled rain and mud at each cutting. Although the resulting yields were high in 1986, quality was off at many locations.

Alfalfa and alfalfa mixtures comprised 28 percent of all hay production. Improved yields brought total alfalfa output to 90,000 tons. Other hay weighed in at 235,000 tons, 23 percent above 1985 output due to increased acreage and yield.

The 1986 hay crop was valued at $29.6 million, 13 percent above the 1985 value.

TOBACCO:

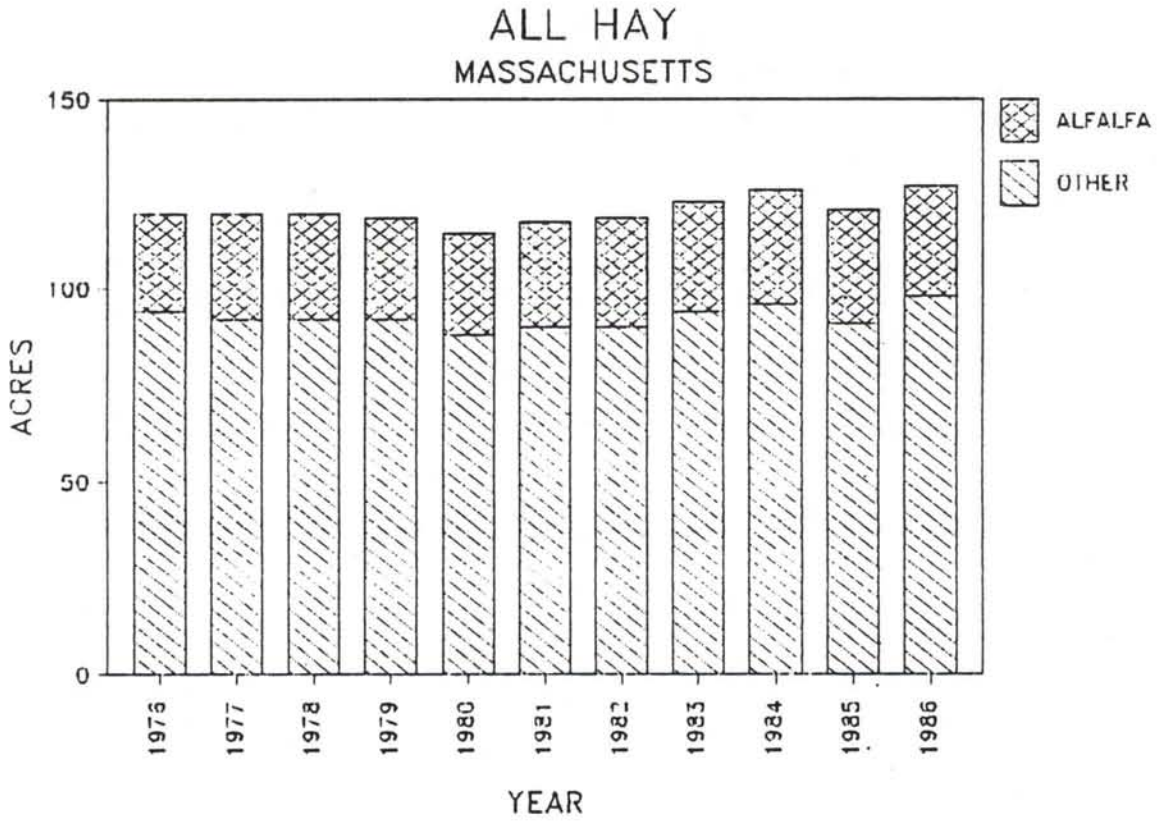
Massachusetts tobacco output totaled 622,000 pounds in 1986, 20 percent under 1985 production. The crop was valued at $5.3 million, 25 percent less than the previous year.

Havana seed acreage remained unchanged at 130 acres. Excessive rainfall and wind damage from early August storms reduced crop potential at many locations. Yields averaged 1,925 pounds per acre, which placed production 2 percent under 1985 output.

Reductions in both acreage and yield placed 1986 shade production 29 percent under the previous year.

CORN: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	ACRES PLANTED FOR ALL PURPOSES	SILAGE			
		ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION	VALUE OF PRODUCTION
	1,000		Tons	1,000 Tons	1,000 Dollars
1976	43	38	15.5	589	12,987
1977	44	38	16.0	608	13,923
1978	45	40	16.5	660	14,850
1979	44	39	17.0	663	16,575
1980	45	40	17.0	680	19,380
1981	46	39	20.0	780	19,968
1982	46	39	17.0	663	18,763
1983	43	39	17.0	663	19,956
1984	45	40	15.5	620	18,724
1985	46	39	19.0	741	22,230
1986	43	36	18.0	648	18,144



ALFALFA HAY: ACREAGE AND PRODUCTION, MASSACHUSETTS, 1976 - 1986

YEAR	ACRES HARVESTED	YIELD PER ACRE	PRODUCTION
		Tons	
1976	26,000	2.45	64,000
1977	28,000	2.30	64,000
1978	28,000	2.60	73,000
1979	27,000	2.90	78,000
1980	27,000	2.40	65,000
1981	28,000	2.80	78,000
1982	29,000	2.80	81,000
1983	29,000	3.00	87,000
1984	30,000	2.80	84,000
1985	30,000	2.90	87,000
1986	29,000	3.10	90,000

ALL OTHER HAY: ACREAGE AND PRODUCTION, MASSACHUSETTS, 1976 - 1986

YEAR	ACRES HARVESTED	YIELD PER ACRE	PRODUCTION
		Tons	
1976	94,000	2.00	188,000
1977	92,000	1.90	175,000
1978	92,000	2.15	198,000
1979	92,000	2.25	207,000
1980	88,000	2.10	185,000
1981	90,000	2.15	194,000
1982	90,000	2.25	203,000
1983	94,000	2.40	226,000
1984	96,000	2.25	216,000
1985	91,000	2.10	191,000
1986	98,000	2.40	235,000

ALL HAY: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	ACRES HARVESTED	YIELD PER ACRE	PRODUCTION	PRICE PER TON	VALUE OF PRODUCTION
		Tons		Dollars	1,000 Dollars
1976	120,000	2.10	252,000	71.00	17,892
1977	120,000	1.99	239,000	69.00	16,491
1978	120,000	2.26	271,000	73.00	19,783
1979	119,000	2.39	285,000	72.00	20,520
1980	115,000	2.17	250,000	76.00	19,000
1981	118,000	2.31	272,000	80.00	21,760
1982	119,000	2.39	284,000	89.00	25,276
1983	123,000	2.54	313,000	92.00	28,796
1984	126,000	2.38	300,000	95.00	28,500
1985	121,000	2.30	278,000	94.00	26,132
1986	127,000	2.56	325,000	91.00	29,575

TOBACCO, SHADE-GROWN: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION	PRICE PER POUND	VALUE OF PRODUCTION
		Pounds	1,000 Pounds	Dollars	1,000 Dollars
1976	1,050	1,480	1,554	5.40	8,392
1977	980	1,600	1,568	6.00	9,408
1978	860	1,300	1,118	7.50	8,385
1979	770	1,400	1,078	8.50	9,163
1980	940	1,475	1,387	9.80	13,593
1981	900	1,575	1,418	10.00	14,180
1982	250	1,200	300	12.50	3,750
1983	170	1,470	250	11.00	2,750
1984	350	1,400	490	12.50	6,125
1985	360	1,460	526	12.65	6,654
1986	340	1,095	372	13.10	4,873

TOBACCO, HAVANA SEED: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION	PRICE PER POUND	VALUE OF PRODUCTION
		Pounds	1,000 Pounds	Dollars	1,000 Dollars
1976	160	1,819	291	0.87	253
1977	180	1,880	338	0.98	331
1978	170	2,000	340	1.10	374
1979	220	1,850	407	1.20	488
1980	250	2,000	500	1.31	655
1981	240	2,300	552	1.40	773
1982	300	1,840	552	1.35	745
1983	255	2,090	533	1.40	746
1984	150	1,965	295	1.55	457
1985	130	1,960	255	1.60	408
1986	130	1,925	250	1.60	400

FRUIT, POTATO AND VEGETABLE HIGHLIGHTS

FRUIT:

Cranberry production in Massachusetts surpassed all records in 1986, securing the Commonwealth's place as number one in the Nation. Growers harvested 1.8 million barrels, exceeding 1985's output by 7 percent. Excellent growing conditions contributed to a record high yield of 159.3 barrels to the acre. Bogs overwintered well, and survived numerous spring frosts with little injury. Bloom was average to heavy, and bee activity excellent. Adequate rainfall and generally light insect pressure prevailed throughout the rest of the season, promoting a high-yielding, high-quality crop.

Massachusetts commercial apple production totaled 2.3 million bushels (42-pound units) in 1986, 7 percent above 1985's hurricane reduced crop. Adequate moisture and cool temperatures promoted good sizing and coloring, but full crop potential was limited by spring frosts, hail and heavy drop. An estimated 3 million pounds were left unharvested due largely to discontinued Alar use, which caused heavy drop on Macs and Delicious varieties. Value of the 1986 crop totaled $18.0 million, 16 percent above the previous year.

Peach growers in Massachusetts harvested 40,000 bushels (48-pound units) in 1986, 10 percent under 1985's big crop. Trees survived the winter in good shape, and most orchards escaped the heavy frosts with little damage. A heavy bloom was accompanied by good pollinating weather, although somewhat cooler than normal. The 1986 utilized crop of 38,000 bushels was valued at $864,000, slightly above the previous year.

POTATOES:

Potato production in Massachusetts totaled 667,000 cwt. in 1986, 19 percent below 1985's big crop, but 15 percent above 1984 output. A depressed market for 1985 crop potatoes persuaded growers to switch to other crops in 1986, and 400 acres were removed from potato production. Adequate moisture and heat promoted good tuber sizing in the Commonwealth. Cool and wet conditions at harvest slowed digging progress, but most growers had the crop out of the ground by third week in October, about a week behind schedule. Yields averaged 230 cwt. per acre, well above the previous 5 year average. Value of the 1986 potato crop was placed at $4.1 million, 45 percent above the previous year's value.

VEGETABLES:

Production of tomatoes for fresh market sales totaled 127,000 cwt. in 1986, 23 percent less than in 1985. Because average price received per cwt. more than doubled between the 1985 and 1986 seasons, the value of production reached a record $7.0 million despite the smaller total production. Average price per cwt. was $55 in 1986, compared with $27 in 1985. Production of sweet corn for fresh market sales in 1986 totaled 790,000 cwt., 6 percent more than in 1985. Yield per acre remained at 94 cwt. in both years, while acreage harvested increased by 500 acres to 8,400 in 1986. Season average price, at $17.50 per cwt., was a record high, and contributed to the record high value of production, $13.8 million.

CRANBERRIES: ACREAGE, PRODUCTION, UTILIZATION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION 1/	UTILIZATION			SEASON AVERAGE PRICE PER BARREL 3/	VALUE OF UTILIZED PRODUCTION 4/
				FRESH SALES	PROCESSED	SHRINKAGE 2/		
		Barrels	1,000 Barrels				Dollars	1,000 Dollars
1976	11,200	83.5	935	220	630	85	13.40	12,529
1977	11,200	78.1	875	207	576	92	17.70	15,488
1978	11,200	105.4	1,180	247	833	100	21.60	25,488
1979	11,200	96.4	1,080	130	880	70	26.60	28,728
1980	11,200	105.8	1,185	110	1,016	59	33.50	39,698
1981	11,200	104.6	1,172	205	875	92	41.50	48,639
1982	11,200	114.9	1,287	169	998	120	46.30	59,588
1983	11,200	126.9	1,421	177	1,217	27	51.70	73,466
1984	11,200	148.5	1,663	170	1,442	51	54.50	90,634
1985	11,300	149.3	1,687	167	1,472	48	54.80	92,448
1986	11,300	159.3	1,800	n/a	n/a	n/a	n/a	98,640 5/

1/ Includes cranberries that were put in set aside under the Cranberry Marketing Order.
2/ Berries paid for by processors and lost because of dehydration and berry breakdown after delivery.
3/ Equivalent return at first delivery point, screen basis.
4/ Excludes cranberries that were put in set aside under the Cranberry Marketing Order.
5/ 1985 prices used to compute 1986 value.

APPLES: PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	TOTAL PRODUCTION 1/	UTILIZED PRODUCTION	PRICE PER UNIT	VALUE OF UTILIZED PRODUCTION
	1,000 42-Pound Units		Dollars	1,000 Dollars
1976	2,262	2,262	6.13	13,870
1977	2,262	2,190	5.38	11,776
1978	2,500	2,500	5.80	14,490
1979	2,262	2,262	6.51	14,725
1980	2,381	2,381	6.11	14,550
1981	1,976	1,976	8.35	16,501
1982	2,381	2,381	7.26	17,290
1983	2,310	2,310	7.10	16,403
1984	2,310	2,310	7.82	18,063
1985	2,119	2,024	7.70	15,594
1986	2,262	2,190	8.24	18,048

1/ Estimates relate to production in orchards of 100 or more trees.

PEACHES: PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	UTILIZED PRODUCTION	PRICE PER UNIT	VALUE OF UTILIZED PROODUCTION
	1,000 48-Pound Units	Dollars	1,000 Dollars
1976	35	12.63	442
1977	42	10.48	440
1978	38	13.74	522
1979	38	15.16	576
1980	42	14.29	600
1981	4	17.50	70
1982	31	21.77	675
1983	35	22.34	782
1984	40	19.00	760
1985	44	19.57	861
1986	38	22.74	864

POTATOES: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS 1976 - 1986

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION	AVERAGE PRICE PER CWT.	VALUE OF PRODUCTION
		Cwt.	1,000 Cwt.	Dollars	1,000 Dollars
1976	3,500	220	770	5.80	4,466
1977	3,700	240	888	5.40	4,795
1978	3,600	225	810	6.30	5,103
1979	3,400	220	748	5.60	4,189
1980	3,400	220	748	7.50	5,610
1981	3,300	225	743	5.40	4,012
1982	3,800	205	779	3.90	3,038
1983	3,400	190	646	7.20	4,651
1984	2,900	200	580	5.40	3,132
1985	3,300	250	825	3.40	2,805
1986	2,900	230	667	6.10	4,069

TOMATOES: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION	AVERAGE PRICE PER CWT.	VALUE OF PRODUCTION
		Cwt.	1,000 Cwt.	Dollars	1,000 Dollars
1976	590	195	115	21.40	2,461
1977	560	190	106	20.40	2,162
1978	550	210	116	21.80	2,529
1979	510	190	97	24.60	2,386
1980	680	210	143	21.70	3,103
1981	760	215	163	20.10	3,276
1982	660	220	145	30.00	4,350
1983	570	165	94	30.00	2,820
1984	660	230	152	27.00	4,104
1985	670	245	164	27.00	4,428
1986	590	215	127	55.00	6,985

SWEET CORN: ACREAGE, PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1986

YEAR	ACRES HARVESTED	YIELD PER ACRE	TOTAL PRODUCTION	AVERAGE PRICE PER CWT.	VALUE OF PRODUCTION
		Cwt.	1,000 Cwt.	Dollars	1,000 Dollars
1976	8,200	72	590	7.71	4,549
1977	7,800	60	468	8.90	4,165
1978	7,200	88	634	7.00	4,438
1979	7,700	84	647	8.99	5,817
1980	8,200	88	722	9.09	6,563
1981	8,800	85	748	11.70	8,752
1982	7,700	88	678	14.00	9,492
1983	8,700	92	800	13.30	10,640
1984	8,100	88	713	14.50	10,339
1985	7,900	94	743	12.80	9,510
1986	8,400	94	790	17.50	13,825

MAPLE SYRUP

The production of maple syrup during the 1987 season in Massachusetts totaled 28,000 gallons, 7 percent less than the previous season. The decrease in production from previous year was due to lower yield per tap which more than offset a higher number of taps. The season was reported as being unfavorable, with the weather being mostly too warm. The season lasted 26 days. The average opening date was March 6, with the average closing date of April 1. The sweetness of sap was near normal with a reported average of 41 gallons of sap to make a gallon of syrup. The color of syrup was mostly medium to light. The 1987 maple crop averaged a record high $31.00 per gallon compared to $25.10 per gallon for maple syrup produced in 1986. The value of production for 1987 season totaled $868,000, up $115,000 from the 1986 crop. The increased value of production was due to the increase in average price, more than offsetting the decrease in production.

MAPLE SYRUP: PRODUCTION AND VALUE, MASSACHUSETTS, 1976 - 1987

YEAR	PRODUCTION	SEASON AVERAGE PRICE PER GALLON	VALUE OF PRODUCTION
	1,000 Gallons	Dollars	1,000 Dollars
1976	27	12.75	344
1977	27	14.20	383
1978	28	14.10	395
1979	30	15.90	477
1980	20	18.40	368
1981	50	18.70	935
1982	48	20.20	970
1983	32	20.90	669
1984	43	20.60	886
1985	42	22.10	928
1986	30	25.10	753
1987	28	31.00	868

MAPLE SYRUP PRICES: BY TYPE OF SALE AND SIZE OF CONTAINER, MASSACHUSETTS, 1976 - 1986

YEAR	RETAIL					WHOLESALE					ALL SALES EQUIVALENT PER GALLON
	GAL	1/2 GAL	QUART	PINT	1/2 PINT	GAL	1/2 GAL	QUART	PINT	1/2 PINT	
	Dollars										
1976	11.65	6.45	3.90	2.55	1.50	10.35	5.75	3.35	2.20	1.35	12.75
1977	12.30	6.90	4.05	2.65	1.80	11.20	6.05	3.70	2.40	1.50	14.20
1978	13.10	7.40	4.29	2.81	1.86	11.66	6.59	3.79	2.41	1.49	14.10
1979	14.88	8.37	4.84	3.12	2.13	12.53	7.13	4.09	2.66	1.77	15.90
1980	17.66	9.69	5.88	3.69	2.46	16.25	8.94	4.73	3.07	1.98	18.40
1981	18.69	10.73	6.23	4.07	2.59	16.44	9.39	5.39	3.33	2.01	18.70
1982	19.39	11.31	6.61	4.20	2.68	16.38	9.87	5.41	3.46	2.13	20.20
1983	19.29	11.08	6.56	4.23	2.64	17.09	9.76	5.74	3.42	2.23	20.90
1984	19.40	11.16	6.56	4.28	2.66	16.80	9.54	5.48	3.50	2.25	20.60
1985	20.30	11.70	6.80	4.20	2.75	17.75	10.20	5.70	3.50	2.25	22.10
1986	22.85	13.00	7.60	4.70	3.15	20.40	11.60	6.85	4.05	2.65	25.10

PRICES PAID BY FARMERS: INDEX NUMBERS, ANNUAL AVERAGE, UNITED STATES, 1976 - 1986, BY YEARS (1977=100)

YEAR	COMMODITIES & SERVICES, INTEREST, TAXES & WAGE RATES	PRODUCTION ITEMS INTEREST, TAXES & WAGE RATES	PRODUCTION ITEMS	INTEREST PAYABLE PER ACRE	TAXES PAYABLE PER ACRE	WAGE RATES FOR HIRED FARM LABOR 1/
1976	95	95	97	88	94	93
1977	100	100	100	100	100	100
1978	108	109	108	117	100	107
1979	123	125	125	143	107	117
1980	138	139	138	178	114	126
1981	150	151	148	216	123	137
1982	159	159	153	249	124	144
1983	161	159	152	258	129	148
1984	165	162	155	257	132	151
1985	163	157	151	238	133	154
1986	159	151	145	213	134	160

1/ Simple average of quarterly indexes seasonally adjusted.

INDEX NUMBERS OF PRICES RECEIVED BY FARMERS, BY COMMODITY GROUPS, U.S. ANNUAL AVE., 1976 - 1986 (1977=100)

YEAR	CROPS								LIVESTOCK & PRODUCTS				ALL FARM PRODUCTS
	FOOD GRAINS	FEED GRAINS AND HAY	TOBACCO	COTTON	OIL BEARING CROPS	FRUIT	COMMERCIAL VEGETABLES	TOTAL	DAIRY PRODUCTS	POULTRY & EGGS	MEAT ANIMALS	TOTAL	
1976	129	120	93	99	85	80	91	102	100	102	101	101	102
1977	100	100	100	100	100	100	100	100	100	100	100	100	100
1978	122	101	109	91	93	137	105	105	109	106	134	124	115
1979	147	114	118	96	103	144	110	116	124	111	166	147	132
1980	165	132	125	114	102	124	113	125	135	112	156	144	134
1981	166	141	140	111	110	130	136	134	142	116	150	143	139
1982	146	120	153	92	88	175	126	121	140	110	155	145	133
1983	148	143	155	104	102	128	130	128	140	118	147	141	135
1984	144	145	153	108	109	202	135	139	139	135	151	146	142
1985	133	122	153	93	84	181	127	120	131	119	142	136	128
1986	109	98	138	91	77	167	129	106	129	128	145	138	123

FARM PRODUCTION EXPENDITURES, NORTHEAST 1/ AND UNITED STATES, 1986

EXPENDITURE 2/	NORTHEAST		UNITED STATES	
	AVERAGE PER FARM 3/	TOTAL EXPENDITURE 4/	AVERAGE PER FARM 3/	TOTAL EXPENDITURE 4/
	Dollars	Million Dollars	Dollars	Million Dollars
TOTAL FARM PRODUCTION EXPENDITURES	50,805	7,903	47,976	105,995
LIVESTOCK & POULTRY:	2,801	436	4,549	10,051
Cattle Purchased	1,534	239	3,471	7,668
Hogs & Pigs Purchased	217	34	464	1,025
Poultry Purchased	807	126	433	958
FEED:	10,119	1,574	6,766	14,948
Grains	2,168	337	1,768	3,907
Hays & Forages	493	77	753	1,665
Protein Concentrates	1,264	197	1,144	2,527
Minerals, Salt & Other Additives	376	59	301	665
FARM SERVICES:	9,390	1,461	10,546	23,300
Crop Custom Services	269	42	621	1,372
Livestock Custom Services	287	45	244	538
Transportation	1,560	243	507	1,120
Rent	1,156	180	4,326	9,558
Cash Rent	1,031	(160)	2,053	4,535
Share Rent	125	(20)	2,273	5,022
Marketing & Storage Expenses	997	155	832	1,838
Insurance	1,118	174	1,079	2,383
Leasing 5/	110	17	190	419
Miscellaneous Farm Business Expenses 6/	640	99	845	1,868
Utilities	1,388	216	1,111	2,455
Electricity	1,103	172	905	2,000
AGRICULTURAL CHEMICALS & SPRAYS: 7/	1,017	158	1,604	3,544
FERTILIZER: 8/	2,607	406	3,109	6,868
Commercial Fertilizers	2,175	338	2,963	6,547
INTEREST: 9/	3,117	485	4,603	10,170
Farm Real Estate 9/	2,376	370	2,955	6,529
Operating Loan 9/	741	115	1,648	3,641
TAXES (PROPERTY & REAL ESTATE): 9/	1,640	255	1,179	2,605
LABOR EXPENSES:	6,808	1,059	4,487	9,913
Cash Wages	5,575	867	3,644	8,051
FUELS & LUBRICANTS:	1,901	296	2,124	4,692
Diesel	673	105	923	2,039
Gasoline - Bulk	492	77	481	1,063
Gasoline - Service Station	206	32	201	444

See Footnotes, Page 26

FARM PRODUCTION EXPENDITURES, NORTHEAST 1/ AND UNITED STATES, 1986

EXPENDITURE 2/	NORTHEAST		UNITED STATES	
	AVERAGE PER FARM 3/	TOTAL EXPENDITURE 4/	AVERAGE PER FARM 3/	TOTAL EXPENDITURE 4/
	Dollars	Million Dollars	Dollars	Million Dollars
FARM SUPPLIES: 10/	1,080	168	697	1,539
Supplies Used in Production	491	76	383	846
Containers Used for Marketing	589	92	314	693
BUILDING & FENCING:	2,198	342	1,083	2,393
New Construction & Remodeling	1,516	236	736	1,626
FARM AND LAND IMPROVEMENTS:	381	59	383	847
New Construction	245	38	233	514
TOTAL FARM MACHINERY:	4,830	751	4,278	9,452
SEEDS AND PLANTS:	1,632	254	1,589	3,511
TRUCKS AND AUTOS:	1,143	178	776	1,714
Trucks including beds, hydr. systems, etc.	934	145	663	1,464

1/ Includes eleven states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont.
2/ Farm share.
3/ Total expenditure divided by number of farms.
4/ Totals may not add, due to rounding.
5/ Includes equipment renting.
6/ Excludes telephone and water, but includes irrigation water cost and fees for 1985.
7/ Excludes seed treatments.
8/ Includes materials and applications.
9/ Includes landlord expenditures.
10/ Includes bedding, litter, straw and etc.; other non-capitalized equipment for livestock and poultry. Excludes power farm shop equipment and motor supplies.

FARM BALANCE SHEET (Excluding Farm Households), MASSACHUSETTS, DECEMBER 31, 1981 - 1985

ITEM	1981	1982	1983	1984	1985
			Million Dollars		
Assets:					
Real Estate 1/	966.9	987.0	1,064.7	1,217.9	1,417.9
Livestock and Poultry 2/	87.6	81.1	66.1	64.9	64.6
Machinery and Motor Vehicles 3/	180.8	182.3	181.4	172.0	166.6
Crops 4/	24.8	26.1	26.1	26.0	23.9
Financial Assets	74.4	75.9	79.6	83.5	77.9
TOTAL FARM ASSETS	1,334.5	1,352.4	1,417.9	1,564.4	1,750.9
Claims:					
Real Estate Debt 5/	82.7	86.6	89.6	100.3	51.3
Non-Real Estate Debt 6/	138.9	140.9	120.5	120.3	106.9
TOTAL FARM DEBT	221.6	227.6	210.2	220.6	158.2
Equity	1,112.9	1,124.8	1,207.7	1,343.8	1,592.7

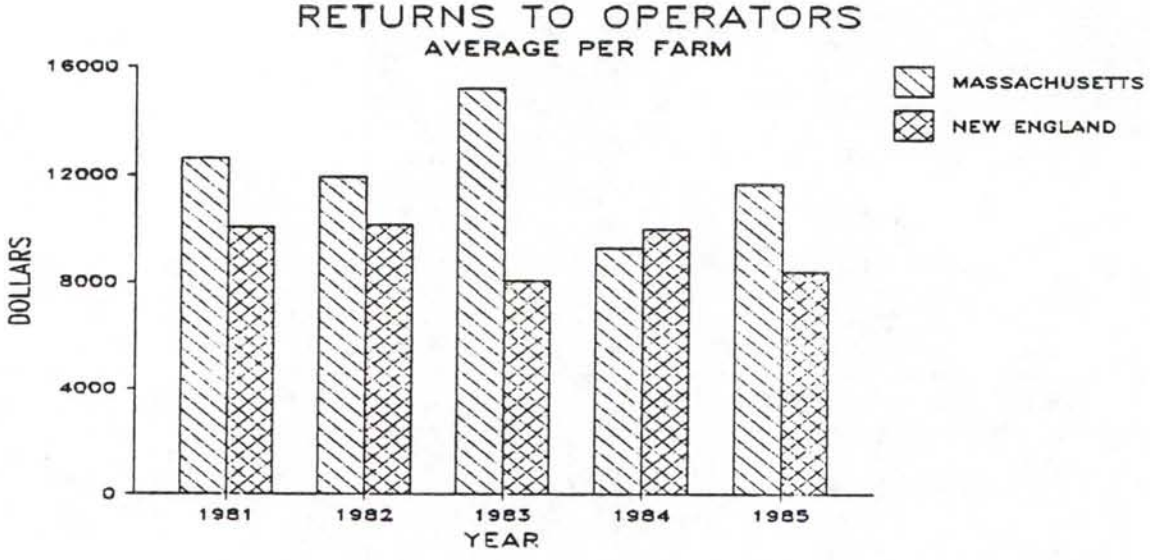
1/ Excludes value of operator dwellings.
2/ Excludes horses, mules, and broilers.
3/ Includes only farm share value for trucks and autos.
4/ All crops held on farms including crops under CCC and crops held off farms by farm operators.
5/ Excludes debt on operator dwellings.
6/ Excludes debt for non-farm purposes.

FARM PRODUCTION EXPENSES, MASSACHUSETTS, 1981 - 1985

CURRENT FARM OPERATING EXPENSES	1981	1982	1983	1984	1985
			Million Dollars		
Feed	49.6	47.2	54.9	47.1	44.9
Livestock	1.5	1.0	1.1	1.1	1.1
Seed	7.4	6.0	5.6	6.5	6.4
Fertilizer, Lime & Pesticides	15.0	13.8	12.1	12.5	14.7
Fuel & Oil	19.8	17.2	16.3	15.6	14.4
Repair & Operation	19.4	20.6	20.2	23.5	24.6
Labor	48.7	53.8	51.5	51.9	52.9
Interest	25.9	28.3	25.6	22.9	15.1
Business Taxes	13.9	14.8	15.1	15.2	16.3
Miscellaneous Expenses	33.6	42.2	45.8	45.9	45.1
Capital Consumption	69.4	74.4	78.2	91.3	96.8
Net Rent to Non-Operator Landlords	3.2	2.1	2.8	4.1	4.3
TOTAL PRODUCTION EXPENSES	307.5	321.4	329.3	337.6	336.5

Farm Income, Massachusetts, 1981 - 1985

ITEM	1981	1982	1983	1984	1985
			Million Dollars		
Gross Income					
Cash Receipts from Farm Marketings	349.4	351.9	369.1	389.2	389.1
Government Payments	.8	.6	.7	3.1	2.4
Other Farm Income	8.6	9.2	9.7	12.2	14.1
Non Cash Income	57.3	64.8	66.2	65.4	80.8
Farm Production Expenses	307.5	321.4	329.3	337.6	336.5
Value of Inventory Adjustments	-6.7	-6.8	1.7	-61.5	-57.8
Net Farm Income	101.9	98.4	118.1	70.9	92.1



CROP AND LIVESTOCK PRODUCTION: RANK AMONG STATES, MASSACHUSETTS AND NEW ENGLAND, 1986

ITEM	UNIT	MASSACHUSETTS			NEW ENGLAND		
		PRODUCTION	RANK	%U.S. TOTAL	PRODUCTION	RANK	%U.S. TOTAL
		1,000			1,000		
CROPS:							
Cranberries	barrels	1,800	1	50.4	n/a	n/a	n/a
Apples	42-pounds	2,262	11	1.2	7,964	7	4.2
Peaches, Freestone	48-pounds	40	30	.1	n/a	n/a	n/a
Corn for Silage	tons	648	31	.7	3,943	7	4.5
Hay, All	tons	325	43	.2	2,141	25	1.4
Potatoes, Fall	cwt.	667	30	.2	22,328	4	6.3
Tobacco	pounds	622	16	.05	3,684	14	.3
Sweet Corn	cwt.	790	7	5.3	n/a	n/a	n/a
Tomatoes	cwt.	127	19	.4	n/a	n/a	n/a
Maple Syrup	gallons	30	n/a	n/a	434	n/a	n/a
LIVESTOCK AND POULTRY:							
Eggs	each	315,000	36	.5	3,045,000	9	4.4
Milk	pounds	561,000	39	.4	4,674,000	8	3.2
Wool	pounds	85	31	.1	413	29	.5
Sheep	head	n/a	n/a	n/a	5.4	24	.4
Lambs	head	5	37	.1	39.3	28	.7
Hogs and Pigs	head	37	41	*	79.1	34	.1
Cattle	head	29	45	.06	201.1	38	.4
Calves	head	27	42	.3	220.0	18	2.1

* Less than .05 percent

FARMS: NUMBER AND LAND, MASSACHUSETTS AND NEW ENGLAND, 1976 - 1987 1/

YEAR	MASSACHUSETTS			NEW ENGLAND		
	NUMBER OF FARMS	AVERAGE SIZE	LAND IN FARMS	NUMBER OF FARMS	AVERAGE SIZE	LAND IN FARMS
		Acres	1,000 Acres		Acres	1,000 Acres
1976	6,300	111	700	27,960	185	5,165
1977	6,200	111	690	28,300	182	5,155
1978	5,900	115	680	28,700	180	5,165
1979	6,200	113	700	29,900	173	5,165
1980	6,200	116	720	30,660	169	5,185
1981	6,100	115	700	30,920	169	5,225
1982	6,100	113	690	30,000	169	5,075
1983	6,100	110	670	30,200	167	5,045
1984	6,100	111	680	29,650	170	5,038
1985	6,000	113	680	28,950	169	4,893
1986	6,000	113	680	28,650	169	4,843
1987	6,000	113	680	28,650	169	4,833

1/ A farm is a place as of June 1 that sells or could sell $1,000 of agricultural products during the year.

UNITED STATES: CIVILIAN PER CAPITA CONSUMPTION OF MAJOR FOOD COMMODITIES (RETAIL WEIGHT) 1/, 1978 - 1985

COMMODITY	1978	1979	1980	1981	1982	1983	1984	1985 2/
	Pounds							
MEATS	146.9	144.8	147.7	145.2	139.3	144.1	143.7	144.4
Beef	87.2	78.0	76.5	77.2	77.2	78.7	78.6	79.2
Veal	2.4	1.7	1.5	1.6	1.6	1.7	1.8	1.8
Lamb and Mutton	1.4	1.3	1.4	1.4	1.5	1.5	1.5	1.4
Pork	55.9	63.8	68.3	65.0	59.0	62.2	61.8	62.0
FISH (edible weight)	13.4	13.0	12.8	12.9	12.3	13.1	13.7	14.5
Canned	5.0	4.8	4.5	4.8	4.3	4.8	4.9	5.2
Fresh and Frozen	8.1	7.8	8.0	7.8	7.7	8.0	8.5	9.0
Cured	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3
POULTRY PRODUCTS								
Eggs	34.6	35.3	34.6	33.8	33.4	33.1	33.0	32.4
Chicken (ready-to-cook)	46.7	50.6	50.1	51.7	53.1	53.9	55.7	57.4
Turkey (ready-to-cook)	9.2	9.9	10.5	10.7	10.8	11.2	11.4	11.9
DAIRY PRODUCTS								
Cheese (excluding cottage)	17.0	17.2	17.6	18.4	20.1	20.6	21.7	22.4
Canned and Bulk Whole Milk	4.2	4.1	3.8	4.1	4.1	3.9	3.8	3.7
Fluid Milk and Cream (product weight)	257.1	253.0	249.5	245.3	244.5	242.3	243.3	245.1
Ice Cream (product weight)	17.4	17.1	17.3	17.2	17.5	17.9	18.0	18.0
FATS AND OILS - TOTAL FAT CONTENT	54.7	56.1	57.0	57.5	58.4	59.6	58.8	64.0
Butter (actual weight)	4.4	4.5	4.5	4.3	4.6	4.9	4.9	4.9
Margarine (actual weight)	11.2	11.2	11.3	11.2	11.1	10.4	10.4	10.7
Lard	2.1	2.5	2.6	2.5	2.5	2.1	2.1	1.8
Shortening	17.9	18.4	18.2	18.5	18.6	18.5	21.3	22.8
Other Edible Fats and Oils	22.1	22.5	22.7	23.2	23.4	25.1	21.5	25.1
FRUITS								
Fresh	80.5	81.2	86.7	83.9	85.7	88.0	87.5	88.2
Citrus	25.6	23.7	28.1	24.2	25.4	28.2	23.1	21.8
Noncitrus	55.0	57.5	58.6	59.7	60.4	59.8	64.4	66.4
Processed:								
Canned Fruit	17.9	17.8	17.4	16.4	12.9	12.9	8.9	8.5
Canned Juice	16.5	16.9	16.7	19.1	13.7	16.2	n/a	n/a
Frozen (including juices)	12.5	12.6	13.0	12.7	14.1	15.1	13.5	16.2
Chilled Citrus Juices	6.1	5.5	5.9	4.1	3.5	4.1	3.7	3.4
Dried 3/	1.9	2.3	2.2	2.5	2.7	2.8	2.9	2.9
VEGETABLES								
Fresh 4/	70.8	73.5	73.2	72.4	76.8	75.7	80.7	81.4
Canned (excluding potatoes)	51.8	53.2	48.5	45.6	45.6	47.1	n/a	n/a
Frozen (excluding potatoes)	10.7	11.2	10.4	11.6	10.7	11.1	12.0	n/a
Fresh Potatoes	49.9	44.9	44.2	43.6	48.5	45.9	44.7	49.9
Frozen Potato Products	17.2	17.7	16.9	18.2	18.1	18.8	20.8	21.2
Sweetpotatoes 5/	5.5	5.2	4.3	5.3	5.7	4.6	5.1	5.6
GRAINS								
Wheat Flour 6/	115.2	117.2	116.9	115.8	119.4	115.9	117.6	122.5
Rice	5.7	9.4	9.4	11.0	11.8	9.8	8.5	9.3
OTHER								
Coffee	7.9	8.5	7.7	7.7	7.6	7.6	7.5	7.4
Cocoa	2.6	2.6	2.7	2.8	3.0	3.1	3.5	3.6
Peanuts (shelled)	6.0	6.0	4.9	5.6	6.0	5.9	6.0	6.2
Dry Edible Beans	5.6	6.6	5.8	6.8	6.4	4.4	6.1	n/a
Sugar (refined)	91.4	89.3	83.7	79.4	73.7	71.0	67.5	63.4
Corn Sweeteners 7/	43.3	47.2	52.7	58.8	63.8	69.4	77.3	87.5
Soft Drinks (gallon)	35.4	36.8	37.8	38.8	39.5	41.1	44.2	45.6

1/ Quantity in pounds, retail weight unless otherwise shown. Data on calendar year basis except for dried fruits, fresh citrus fruits, peanuts, dry beans and rice which are on a crop-year basis.
2/ Preliminary
3/ Revised
4/ Commercial production for sale as fresh produce.
5/ Table stock and processed.
6/ White, whole wheat, semolina, and durum flour.
7/ Fructose and glucose.
n/a = not available.

CASH RECEIPTS FROM FARM MARKETINGS, MASSACHUSETTS, 1984-1986

COMMODITY	1984	1985	1986	COMMODITY	1984	1985	1986
	1,000 Dollars				1,000 Dollars		
CROPS				LIVESTOCK			
Hay	3,752	4,579	5,517	Cattle and Calves	6,478	6,142	12,746
Tobacco	3,475	6,582	7,062	Hogs and Pigs	4,416	3,948	4,009
Potatoes	3,661	2,786	2,590	Sheep and Lambs	552	504	485
Sweet Corn	10,339	9,510	13,825	Dairy Products	83,430	82,428	76,295
Tomatoes	4,104	4,428	6,985	Chickens	643	731	557
Misc. Vegetables	11,892	12,156	13,054	Eggs	24,253	20,988	24,675
Apples	14,750	15,975	19,149	Turkeys	2,750	2,777	2,824
Peaches	720	820	864	Misc. Poultry	3,422	3,560	2,972
Cranberries	90,634	92,448	98,640	Misc Livestock	5,049	5,544	5,449
Other Berries	2,550	2,650	2,750				
Misc. Fruits	390	400	475	TOTAL LIVESTOCK	130,993	126,622	130,012
Maple	886	928	753				
Forest Products	1,935	2,020	2,280				
Greenhse/Nursery	130,655	105,344	118,089				
Misc. Crops	3,690	3,850	3,150	ALL COMMODITIES	414,426	391,098	425,195
TOTAL CROPS	283,433	264,476	295,183